CHARTER SCHOOL GROWTH AND EDUCATIONAL EQUITY IN METROPOLITAN AREAS

BY

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DISSERTATION

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ABSTRACT

With great financial support and strong political alignment, the potential of market metaphors have been experimented through a variety of school choice programs and new school models for the last two decades. Among them, charter school movements have been rapidly expanding in the US. By bringing into question marketization's potentials of choice and competition in public education, this dissertation steps back from the topic of student performance in charter schools, and instead examines what eventually happened with the growth of charter school markets in multiple ways. This dissertation follows a three-paper format to draw implications through a comprehensive understanding of charter schools. The dissertation looks at three different research regions, selected to fit the objectives of each research paper.

Paper 1: Do Charter Schools Differ from Each Other?

Dissimilarities among charter schools may provide a richer and broader array of school options for children with various needs and interests, as well as function as both marketing tools and informational resources. The first paper examines diversification among charter school organizations through analyzing their mission statements. The study investigates the contents of charter schools' mission statements and explores how differentiated charter school mission statements vary by location, authorizer, management organization, and performance. This paper looks into the mission statements of 189 schools in the Detroit metropolitan area in which a great number of students served by school choice programs have pushed charter schools under competitive pressures. By examining contents of the mission statements, this study finds that overall, apart from the theme of academic emphasis, the charter school mission statements in the Detroit metropolitan area looked essentially alike on many themes. That is, the generic nature of

mission statements in charter schools challenges advocates' assertions that competitive incentives will induce a diversity of school options.

Paper 2: Do Students Have Equal Access to Charter School?

With the assumption that the open enrollment scheme of charter schools leads to equal distribution of educational opportunities, charter schools were expected to weaken the close connection between residence and enrollment. The second paper asks whether or not students have equal potential access to charter schools across communities and how disparities in charter school access are related with housing patterns by race and socioeconomic status. In the New York metropolitan area, the study employing the spatial lag regression analysis shows that children in areas less accessible to charter schools tend to be more exposed to communities with more populations of color, fewer educated adults, higher unemployed groups, lower-earning populations, and less expensive housings. Therefore, the findings, which review physically accessible charter schools from the standpoint of children aged 5 to 13 years, offer empirical evidence that access to charter school differs depending on demographic characteristics and socioeconomic attributes in significant combination with geography. In other words, accessibility is unevenly spread out similar to the distributions of aspatial features in highly fragmented metropolitan areas.

Paper 3: Do New Schools Harm Public School Students?

As a rapidly growing number of charter schools may cause unexpected consequences such as limited access to neighboring schools, the last paper scrutinizes what changes are brought to students by charter schools. Focusing on the case of the Chicago Public Schools, the study reviews the possibility of spatial inequality created by charter school openings and public school closings in highly segregated cities, and uses cartograms to detect the possibility of spatial

inequity in school closures. This study illustrates that local school closures, created by under-enrollment and the corresponding financial burdens in school districts, have a negative impact on accessibility of about 13,000 students to be relocated to other neighboring schools. Specifically, African-American and Hispanic school-aged children, as presented in the large geographic distortions redrawn with the population size, are more likely to exposed to the loss of accessibility after the mass school closings.

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INTRODUCTION

A neo-liberal lens describes the existing school systems highly inefficient and standardized, since their monopolistic structures present few interests of parents' preferences and limit competition among service providers (Chubb & Moe, 1990; Walberg & Bast, 2003). According to proponents of neo-liberalism in public services, the public school system, bureaucratically administered by top-down managements, tends to put much emphasis on uniformity and conformity to rules and regulations. Therefore, they have criticized traditional public schools, arguing that the education system discourages schools from developing innovative school models, providing equitable school experiences for all, and yielding excellent performance. In the attempt to resolve all these problems in current schools, neo-liberalists, in close cooperation with a broad range of political groups and economic stakeholders, have advocated for market mechanisms valuing choice and competition. For them, bringing market metaphors to public education appears a promising strategy to improve overall quality of educational services and products and ultimately transform the governance of public school systems.

As addressed in the landmark book, *Politics, markets, and America's schools* (Chubb & Moe, 1990), privatization and marketization in education empower families to exploit the utilization of school choice according to their needs and interests. Choice not only recasts students and their families as consumers, but also pushes individual school organizations to diversify curricula and innovate activities responsive to their varying preferences (Chubb & Moe, 1990; Friedman, 2002). Given that dissimilarities among schools essentially maintain organizational competitiveness and enhance their marketability in free markets, the lack of

distinctiveness at schools leads to dangers of deficits in school finance due to under-enrollment and consequent school closures.

Aside from diversification in school organizations as a consequence of competition in markets, individual choice behavior has a noteworthy implication on the existing public school system. The traditional approach of school enrollment by residence restricts the parental right to choose another school fitting their needs across school district boundaries (Denton, 1995; D. E. Mitchell, Batie, & Mitchell, 2010; Reardon & Yun, 2001; Reardon, Yun, & Eitle, 2000; Urquiola, 2005). A very real concern about enrollment by residence occurs because the politically designed and socially constructed boundaries are consistent with the US housing patterns divided by race, employment and household income. As current enrollment schemes hinder parents from transferring their children to quality schools in diverse communities, families who want to access quality school options have been required to move into a specific school district (Charles, 2005). In light of the pronounced disparities among schools and school districts, there is no way that marginalized students trapped in at-risk communities can escape their school districts. In this context, choice under market mechanisms may lend institutional support for underprivileged students to transfer to other schools within or across district borders (C. A. Lubienski, 2005; Pont, Goodman, & Steiger, 2001). This paradigm shift toward market forces is expected to provide location-neutral and equal opportunities for underserved students.

Furthermore, it was claimed by advocates of marketization in public education that strengthening parental rights and cultivating diversified school markets would contribute to alleviating inter- and intra-neighborhood tensions (Bast & Walberg, 2004; Chubb & Moe, 1990). Competition among schools in the market structures basically aims to deliver benefits to non-choosers who are left at traditional public schools as well as choosers who actually exercise

choice (Goldhaber, Guin, Henig, Hess, & Weiss, 2005; Wohlstetter, Smith, & Farrell, 2013). Changes brought by market mechanisms are expected to stimulate local conventional schools to spontaneously take part in innovating themselves, which in turn would provide access to quality education for students at neighborhood public schools. With this in mind, recent market-oriented policies are designed to reshape uniform education markets into ones with various options, not to undermine local education systems.

Problem Statement

With great financial support and strong political alignment, the potential of market metaphors have been experimented through a variety of school choice programs and new school models for the last two decades. Among them, charter school movements, stemming from the desire for diverse public schools to depart from a "one-size-fits-all" model in the 1960s and 1970s, have been rapidly expanding in the US (Budde, 1988; Henig, 2009; Wells, Grutzik, Carnochan, Slayton, & Vasudeva, 1999). Since the very first charter school law was passed in Minnesota, forty-two states and the District of Columbia have supported charter schools. As charter schools have been exponentially growing for the last two decades, around 6,500 charter schools are currently serving 2.5 million students nationwide (Center for Education Reform, 2014).

Charter schools are generally free from bureaucratic rules and regulations, but are instead operated under a written contract from an authorizer. Because the relatively increased autonomy granted to charter schools allows the schools to establish distinguishing characteristics and develop innovative teaching methods, diversification in charter schools provides the basis for school choice and competition between school organizations (Budde, 1988; Chubb & Moe,

1990; Friedman, 2002). Therefore, this distinct feature has offered meaningful insights to launching essential steps toward legislative actions in states. In addition to high parent satisfaction and remarkable improvement in effectiveness and efficiency fueled by wide variations in charter schools, charter schools can potentially provide equitable educational opportunities for underserved students in segregated school districts (Vergari, 2002; Viteritti, 1999). Because charter schools do not demand any proof of residency for enrollment, and are prohibited from both drawing catchment areas and establishing admission criteria based on demographic attributes, advocates of school choice expect that these autonomous public schools within traditional public school systems will be instrumental in improving civil rights. Through the expansion of charter schools, students who opt into traditional public schools are primarily expected to gain better access to higher quality local schools cultivated by choice and competition (Goldhaber et al., 2005; Wohlstetter et al., 2013).

Market theories offer philosophical and political rationales for charter schools, specifically accounting for how charter schools would work and what we could be benefited from them. Yet, there is insufficient and fragmented knowledge about the relationship between the promises of market theorists and consequences brought by the expansion of charter schools. Despite a wealth of literature on the impact of charter schools on student achievement (e.g. American Federation of Teachers, 2004; S. T. Lubienski & Lubienski, 2006; A. C. Nelson, Dawkins, & Sanchez, 2004; Winters, 2012; Zimmer et al., 2009), very scant research answers the question of how well charter schools served as an experimental laboratory for diversification and equal education opportunities. Only a few studies have investigated the extent of innovation in curriculum and teaching strategies at charter schools, and their findings revealed that many US charter schools were unlikely to develop individualized curriculum to be differentiated in quasi

markets (Good, Braden, & Drury, 2000; C. A. Lubienski, 2003; Miron, Nelson, & Risley, 2002). In addition to the little attention that has been paid to distinctiveness in basic beliefs, objectives and strategies of charter schools under competitive environments, a number of studies have inadequately explained access to charter schools by relying on poor measures of their catchment areas (Frankenberg, Siegel-Hawley, & Wang, 2011; Garcia, 2008b; Rapp & Eckes, 2007; RPP International, 2000; Sohoni & Saporito, 2009). Considering the legislative flexibility of non-resident requirements for charter school enrollment, the opportunity of learning experiences from charter schools entails a reflection on physically accessible neighborhoods, coupled with the effect of prevailing residential patterns. Furthermore, there is a dearth of research illustrating what changes occur in currently operating local schools. Not only does the rapid expansion of charter schools lead to the imbalance of traditional school markets securely preserved by enrollments, but the decline of enrollment by student transfer, specifically in many metropolitan areas facing a declining number of school-aged children, also puts certain underperforming schools under the threat of ultimate closures (Lipman, 2002; 2011). This lack of evidence calls for additional research on charter school practices embedded in market mechanisms from multifaceted standpoints.

Dissertation Structure

By bringing into question marketization's potentials of choice and competition in public education, this study steps back from the topic of student performance in charter schools, and instead examines what eventually happened with the growth of charter school markets in multiple ways. This dissertation follows a three-paper format to draw implications through a comprehensive understanding of charter schools. The dissertation looks at three different

research regions, selected to fit the objectives of each research paper. Each of the three papers tests potentials of charter schools respectively. In the first paper, charter school mission statements demonstrate the possibility of diversification in school foundations. In the second and third papers, the differences of access to charter schools and traditional public schools are measured on the basis of the concept of potential accessibility. The findings from each paper shed light on equity issues over charter school growth, which in turn will contribute to understanding the potentials and pitfalls in rapidly growing charter schools in the US.

Paper 1: Do Charter Schools Differ from Each Other?

Dissimilarities among charter schools may provide a richer and broader array of school options for children with various needs and interests, as well as function as both marketing tools and informational resources. Particularly considering that charter schools are authorized by their own charters, they can have wide variations depending on who operates the schools and with which objectives (Arsen, Plank, & Sykes, 1999; Chubb & Moe, 1990; Walberg & Bast, 2003). In this sense, the first paper examines diversification among charter school organizations through analyzing their mission statements. Similar to other business organizations, mission statements of educational organizations in general deliver brief but comprehensive information about the values, goals and directions which individual organizations consider important (Meacham, 2008).

The study investigates the contents of charter schools' mission statements and explores how differentiated charter school mission statements vary by location, authorizer, management organization, and performance. This paper looks into the mission statements of 189 schools in the Detroit metropolitan area in which a great number of students served by school choice programs have pushed charter schools under competitive pressures. Contents of the mission statements selected for this study are examined through an inductive content analysis.

Paper 2: Do Students Have Equal Access to Charter School?

With the assumption that the open enrollment scheme of charter schools leads to equal distribution of educational opportunities, charter schools were expected to weaken the close connection between residence and enrollment (Henig, Holyoke, Brown, & Lacireno-Paquet, 2005). Yet, previous research has consistently indicated that charter school location has the potential to polarize school enrollment in fragmented neighborhoods (Glazerman & Dotter, 2016; Hastings, Kane, & Staiger, 2005; Lauder & Hughes, 1999; Orfield & Monfort, 1992; Ryan & Heise, 2002). Because parents' preference for proximity can hinder open access to charter schools without designed attendance zones, there is a high likelihood that segregated neighborhoods are subdivided into areas either more or less accessible to charter schools. By taking into account the increasing significance of socio-geography (Galster & Killen, 1995; Mayer, 1996), the second paper asks whether or not students have equal potential access to charter schools across communities and how disparities in charter school access are related with housing patterns by race and socioeconomic status.

To test how disparities in potential access to charter schools are related with housing patterns by demographic and socioeconomic features, the second study examines charter schools in the New York metropolitan area, one of the most segregated areas in the US. Potential accessibility to charter schools is measured employing an enhanced two-step floating catchment area model (Langford, Fry, & Higgs, 2012; Luo & Qi, 2009; Luo & Wang, 2003; McGrail & Humphreys, 2009; Radke & Mu, 2000). This study uses a spatial regression model to reveal the relationship between the disparities in charter school access and segregated residential patterns.

Paper 3: Do New Schools Harm Public School Students?

In an educational market with no drastic change of demand, opening a new charter school inevitably leads to closing existing public schools for market equilibrium where supply and demand are balanced. Therefore, a rapidly growing number of charter schools may cause unexpected consequences such as limited access to neighboring schools (Lipman, 2011). Though charter schools can be a legitimate option for students in the districts of closed schools, local education agencies do not have the right to demand that students within their attendance boundary attend a charter school. With this in mind, the last paper scrutinizes what changes are brought to students by charter schools.

To this end, the last research paper focuses on the case of the Chicago Public Schools, where new charter schools have been initiated by the New Schools for Chicago fund since 2011, and about 8% of community schools closed due to budget crises in the fall of 2013. The study reviews the possibility of spatial inequality created by charter school openings and public school closings in highly segregated cities, and offers empirical evidence on whether or not closing neighboring schools brings about changes to a student's educational opportunities. This study uses cartograms, by reflecting socio-geographical attributes to detect the possibility of spatial inequity in school closures.

PAPER 1: DO CHARTER SCHOOLS DIFFER FROM EACH OTHER?

Background

An organization in a competitive market starts its business with a differentiated value and a correspondingly distinct objective in order to make a profit. Its stated intention not only distinguishes the organization from competitors by outlining the organizational direction of its behaviors, but also serves as substantive information that consumers collect and evaluate to compare diverse options (Meredith E David, David, & David, 2014; Pearce & David, 1987; Weiss & Piderit, 1999). Applying this notion to recent marketization in public sectors, the strong emphasis on competition and choice encourages schools to build on unique purposes and to develop different behaviors. Variations in school organizations allow parents to enjoy a wide range of school options that meet the various needs and interests of their children. In this sense, the clarity and diversification of school organizational descriptions and goals is becoming necessary for market mechanisms to function in a proper manner (Chubb & Moe, 1990).

Among a variety of school choice initiatives, charter schools, authorized by their own charters, are particularly expected to generate considerable variations (Arsen et al., 1999; Chubb & Moe, 1990; C. A. Lubienski, 2003; Walberg & Bast, 2003). Relatively significant autonomy and freedom from governmental rules and regulations, compared to traditional public schools, empower charter schools to design creative and experimental programs (Arsen et al., 1999; Wohlstetter, Wenning, & Briggs, 1995). Market accountability in exchange for autonomy drives charter schools to differentiate themselves to attract prospective students and retain current students in charter school markets less affected by geographic barriers such as school district boundaries and attendance zones (Wohlstetter et al., 1995). Therefore, charter school

organizations have been required to become distinctive from other charter schools and traditional public schools in order to maximize market incentives. However, we have little knowledge about distinctiveness between the intended offerings of charter schools.

Inspired by previous research looking at organizations through mission statements, this paper analyzes charter school mission statements in a competitive climate as a means to offer insights into the potential of these schools. Generally defined as "an enduring statement of purpose that distinguishes an organization from other similar ones" (Fred R David, 1989, p. 90), mission statements disclose charter school philosophies and educational strategies. The statements motivate charter schools to be held accountable for their expectations and performances (Vergari, 2001). Given the significance of contents and roles in mission statements that broadly demonstrate the direction and long-term vision of organizations (J. H. Davis, Ruhe, Lee, & Rajadhyaksha, 2007; Stemler, Bebell, & Sonnabend, 2011; Weiss & Piderit, 1999), this study examines the self-definition of all individual charter schools in one of the most competitive education markets in the US. The findings from this study elucidate how competitive incentives can either encourage or constrain educational options for families.

Diversification in Charter School Markets

The current public school system has raised little concern about parents' and students' demands, since the current school finance system based on the number of students secures school management without competition. Thus, traditional schools in the community, which have no need of competition for the recruitment of prospective students, have looked similar, or sometimes identical, by placing little weight on innovation and diversification (Chubb & Moe, 1990; Friedman, 1955; Henig, 1995; Walberg & Bast, 2003). As the lack of differentiated

schools hardly satisfies diverse needs and interests of students and their families, market theorists have suggested reestablishing parental role through the behavior of choosing a school. In accordance with their argument, varying reasons for parents' participation in school choice initiatives force schools to be differentially designed to respond to competitive incentives in distinct ways (Haynes, Phillips, & Goldring, 2010; Lareau & Goyette, 2014; Mavrogordato & Stein, 2016; Schneider, Teske, & Marshall, 2000; Schneider, Teske, Roch, & Marschall, 1997; Stein, Goldring, & Cravens, 2010). Money incentives brought by parental choice motivate schools and school districts to compete for limited school funding. As a result, schools under competitive environments would improve and differentiate themselves in order to be chosen, i.e. to reduce the threat of closure, as shown in prior experiences of diversity in private schools and small schools (Boerema, 2006; Pont et al., 2001; Viteritti, 1999; Walberg & Bast, 2003; Weinstein, Jacobowitz, Maguire, Saunders, & Fruchter, 2007). Stimulated by the promise that market forces generate a wide variety of educational alternatives, charter schools have been rapidly growing in the US.

In general, charter schools are free from much of the bureaucratic oversight that characterizes the district-centered system. The combination of deregulation and school-level control in developing their own instructional contents and strategies encourages charter schools to leverage competitive incentives through the distinctiveness of their organizational goals and behaviors. The growth of charter schools calls for numerous studies to cast light on challenges and potentials from marketization in public education, but current studies about charter school organizations heavily focus on the examination of differences in academic performance, enrollment patterns and recruiting behaviors (e.g. Bosetti, 2004; Center for Research on Education Outcomes, 2015; Frankenberg et al., 2011; Garcia, 2008b; Lacireno-Paquet, Holyoke,

Moser, & Henig, 2002). As a case in point, a number of studies point out the distinguishable recruiting strategies based on geographic diversity. According to their findings, some charter schools are likely to open or move into at-risk communities to target children falling into the categories of minority and poverty (Saultz, Fitzpatrick, & Jacobsen, 2015; Witte, Schlomer, & Shober, 2007). However, certain charter school operators are situated in areas with populations meeting their interests and values, e.g. a region with a high proportion of white and advantaged populations, in order to maintain their market position by reducing cost and risk (Burdick-Will, Keels, & Schuble, 2013; Gulosino & d'Entremont, 2011; C. A. Lubienski & Dougherty, 2009; C. A. Lubienski & Weitzel, 2008). A body of literature has well documented how school managers make specific strategic decisions on website contents and how diverse management organizations exploit admission policies in order to benefit from incentives driven by market forces (Ertas & Roch, 2014; Henig et al., 2005; Hernández, 2016; Lacireno-Paquet et al., 2002; C. A. Lubienski, Linick, & York, 2012; Miron, Urschel, Mathis, & Tornquist, 2010; U.S. Government Accountability Office, 2012; Zollers & Ramanathan, 1998)

Much work to date has given rise to the concern about similarities in the behaviors of charter school organizations, especially through recruiting strategies which shape potential applicant pools who may represent an incentive or disincentive for charter schools. However, there is a certain gap in the literature as very little research has investigated competitive incentives for diversification as a manner in which to define their organizations. In addition, the current studies dealing with diversification among charter schools rely on information that is often irrelevant to educational philosophies and instructional objectives (C. A. Lubienski, 2006). Only a few studies have examined diversification in instructional activities to seek the answer to whether or not charter schools develop curricula individualized enough to be considered distinct

in quasi markets (Good et al., 2000; Horn & Miron, 2000; C. A. Lubienski, 2003). These studies suggested that a number of US charter schools highlighted traditional curricula and teaching strategies such as 'back to basics,' often more so than conventional public schools. Even though research on charter schools increasingly portrays resemblance among their behaviors, insufficient attention has been devoted to diversification in the organizational purposes of charter schools that ultimately determine their organizational behaviors.

Mission Statements

In order to understand how organizations identify their self-concept and define their behaviors, researchers have utilized contents in mission statements, which broadly demonstrate the direction and long-term vision of organizations (e.g. Bartkus, Glassman, & McAfee, 2006; Sheehan, 1996; Swales & Rogers, 1995; L. S. Williams, 2008). The usage of mission statements allows scholars to identify what an individual organization plans to work toward and what desired public image it constructs through its products and services (Meredith E David et al., 2014; Pearce & David, 1987). Applying this strength of mission statements to education markets, charter schools develop their unique identifications with distinctive missions that describe pedagogical values, curricula, and teaching methodologies. Since mission statements clarify priorities and a desired niche within a market when schools enter into the education marketplace (Boerema, 2006; Kotler, 1995; L. S. Williams, 2008), the examination of charter school mission statements can partly account for how the schools effectively tailor applicant pools by shaping whom they serve (Drame & Frattura, 2010; Eckes & Plucker, 2005; R. A. Fox, Buchanan, Eckes, & Basford, 2012; Loveless, 2002). Furthermore, contents in charter school mission statements have a profound impact on providing fundamental information to future consumers on what each organization intends and aspires to be (Boerema, 2006; J. H. Davis et al., 2007; Meacham, 2008;

Stemler et al., 2011). As mission statements are the most easily accessible forms of information found in written materials such as school websites and brochures, school leaders are able to utilize the mission statement of a charter school as a powerful tool of marketing and branding essential to differentiate between available school options (DiMartino & Jessen, 2016).

Notable scholars have explored contents of mission statements and manners in which organizations utilize them in reality. Most studies have focused on the mission statements of postsecondary or private educational organizations, likely because these educational institutions have been more subjected to market forces (e.g. J. A. Black & Latta, 2015; Grbic, Hafferty, & Hafferty, 2013; Newsom & Hayes, 1991; Stemler & Bebell, 1999; B. J. Taylor & Morphew, 2010)). For instance, Morphew and Hartley (2006) analyzed the pattern of strategic expressions of over 300 mission statements at higher education organizations, and found significant differences by institutional control and type. In the Stich and Reeves study (2016), the mission statements in the U.S. universities deliver different contents of higher education quality and excellence and elaborate their texts in the statements by university ranking. Boerema (2006), who looked at private schools in Canada, discerned substantial variations among mission statements around five concepts that explain the school's distinctive beliefs, the school's goals and objectives, the environment, services offered, and parental involvement. In the US, where markets principles such as competition and choice have generally intensified in public schools since the No Child Left Behind Act of 2001 (NCLB), research on mission statements at primary and secondary schools has only recently been conducted. According to the study by Stemler et al. (2011), 421 high school mission statements randomly selected from 10 states evinced differences depending on school location and student body composition. These previous studies suggest that mission statements of educational service providers in competitive environments can be devices

to distinguish themselves from others and provide information about their programs for prospective students.

In line with the straightforward expectation that competitive incentives induce innovation and diversification (C. A. Lubienski, 2003), charter school mission statements, depicting the underlying purpose of schooling, can have large variations. Hoxby, Murarka, and Kang (2009) categorized mission statements of the New York City charter schools into five groups: child-centered philosophy, traditional educational mission, academic-oriented mission, mission targeting a certain group of students, and mission with specialized curriculum. McShane and Hatfield (2015) reviewed charter school variations in terms of either general or specialized offerings, using missions, visions and philosophies in charter schools. Yet, such efforts to classify contents in the mission statements often play a limited role in charter school research, by functioning as a secondary tool to assess charter school performance. As a case in point, Paino, Renzulli, Boylan and Bradley (2014) coded North Carolina charter school mission statements according to the categories of "innovative" and "non-innovative" in order to identify determinants of charter school closure. Similarly, the literature on charter schools suggests that dissimilarities in the mission statements bring about variations in academic performance depending on the manner in which measurable objectives and educational goals were demonstrated (Chingos & West, 2015; Merseth et al., 2009; Miron & Horn, 2002).

Despite the strength of mission statements that delineate what organizations can do best to retain new niche markets (Palmer & Short, 2008), there exists little empirical research on what charter schools' mission statements contain. The lack of research on either homogeneity or heterogeneity in charter school mission statements may hardly provide clear answers of whether charter schools serve different purposes to offer programs fitting diverse needs and interests.

This further challenges the rationale for introducing charter schools to current public school systems, which have been perceived as rigid and inflexible. In this sense, any dissimilarity revealed from the scrutiny of mission statements leads to better understanding of the potentials of charter schools.

Data and Methods

On the grounds that mission statements exemplify values and interests to which organizations give priority, research on charter school mission statements can offer critical information about underlying responses to competitive incentives that allow charter schools to discriminate from competitors. This study examines whether or not charter schools are built on different mission statements, and how contents in mission statements involve similarities and dissimilarities by school location, management organization type, and academic performance. The research explores mission statements of charter schools in the Detroit metropolitan area in Michigan, as one of the most competitive local education markets in the US.

Charter Schools in the Detroit Metropolitan Area

Legally known in the state as "public school academies," a charter school in Michigan is "a state-supported public school under the state constitution, operating under a charter contract issued by a public authorizing body" (Michigan Department of Education, 2012). While many states grant only state and local education agencies authorizing powers to give permission for a charter school operation, Michigan allows the governing board of colleges and universities, as well as intermediate (essentially county-level) school districts, to approve a charter. Since the first public school academy in Michigan opened in 1994, over 80% of Michigan charter schools have been operated by either non-profit or for-profit education management organizations

[EMO] in comparison with the national trend in which fewer than 30% of charter schools are run by EMOs (Center for Education Reform, 2011; National Alliance for Public Charter School, 2013). The variety of charter school authorizers and management organizations in Michigan increases the likelihood of developing more diverse mission statements.

Following New Orleans and the District of Columbia, Detroit has the highest charter school market share among school districts serving more than 10,000 students (National Alliance for Public Charter School, 2012). Although declining dramatically in population, Detroit is still the largest city in Michigan and one of the most segregated metropolitan areas in the country, with stark distinctions between urban and suburban districts. However, because Michigan students can enroll in any charter school in the state according to the Michigan Revised School Code, the Detroit charter school market tends to be stretched over the large metropolitan area beyond traditional attendance zones. This open enrollment scheme in Michigan incentivizes charter schools to establish themselves upon the basis of differentiated school purposes and directions. Therefore, charter schools in the Detroit metropolitan area, which account for approximately 50% of total student enrollments, are expected to be more concerned with elaborating descriptions about themselves through their mission statements in order to compete with neighboring school options.

The Detroit metropolitan area includes the suburban areas surrounding the city of Detroit across three counties: Wayne County including the city of Detroit, Macomb County, and Oakland County. One hundred ninety nine charter schools in these three counties were operating in the 2014-15 school year. Among those, 189 charter schools have mission statements available through school webpages to be analyzed for this study. These charter schools have, on average, two charter schools and 2.8 traditional public schools as competitors, when defining a reachable

region of a given charter school as a one-mile radius from the schools. Out of 189 charter schools, 54 are located in suburban areas, 127 are situated across city areas, and 8 are geographically distant from an urbanized area with populations between 25,000 and 50,000. Though the proportion of white students in all three counties is about 60%, the majority of charter school students are African American, and these black students tend to be clearly concentrated in Wayne and Oakland Counties. About 75% of the charter schools selected for this study are operated by 41 for-profit EMOs in the 2014-15 school year, and only 17 charter schools are self-managed.

Inductive Content Analysis

In order to analyze the content of mission statements, the study uses inductive content analyses which proceed in the steps of open coding, grouping coded contents, categorizing, and building a conceptual map (Elo & Kyngäs, 2008; Hsieh & Shannon, 2005). This open-coded typology approach has been adopted in previous research on mission statements (e.g. Morphew & Hartley, 2006; Newsom & Hayes, 1991; Renzulli, Barr, & Paino, 2015; Stemler & Bebell, 1999). First, this study codes 20 mission statements randomly selected from 189 charter schools in the Detroit metropolitan area, and then builds a coding framework identified by keywords appearing in the mission statements. The coding framework categorizes contents from the selected 20 mission statements into 9 themes, and each theme represents "a group of words with similar meaning and/or connotations" (Weber, 1990, p. 37). These 9 themes include academics, attitude, social/cultural skills, community, school success, specialty, partnership, target, and setting, which incorporates 4 subcategories (traditional, non-traditional, safe and supportive settings). The coding frame used in this study is constructed similarly to the previous research on mission statements, where their content has been reviewed according to 6 to 10 thematic

dimensions such as cognitive/academic, social, citizenship/vocational, physical and attitude/value/emotional development, environment, and target clientele. About eight thousands words from the 189 mission statements of the Detroit metropolitan charter schools are labeled on the basis of the coding themes with Atlas.ti, which is a well known computer-aided qualitative data analysis software.

Table 1-1. The Coding Frame of a Mission Statement

Theme	Phrase examples
Academics	Academic achievement/academic excellence/academic proficiency/academic skills Core curriculum/core subjects/high and rigorous standards/standardized curriculum Data-driven learning/test data/achieve to the highest level academically Intellectual development/intellectual gifts
Attitude	Character development/ethical development/moral development Emotional development/psychological development Improving self-esteem/fostering tolerance and equity
Social/cultural skills	Communication skills/interpersonal skills/well-prepared socially Cultural integrity/international cultures/respect for diversity/ethnic traditions Responsible decision maker/resolve conflicts
Community	Citizenship/strengthen civic values Commitment to community service/contribution to communities Success in a democratic society
School success	Earn a high school diploma/graduate from high school/propel to high school College preparatory/enter college/attend university/success in college Career ready/career focused school/exposed to career experiences/success in career
Specialty	Science/technology/engineering/mathematics (STEM) Public safety/health care/arts/languages Leadership/creativity/critical thinker
Partnership	Building strong partnership In collaboration with/in cooperation with/teaming with partners Business partners/community supports/families/higher education/youth serving agencies
Target	At risk of academic failure/behind academically Regardless of economic or social circumstances/as a portal in high need areas For urban students/Detroit students
Setting: Traditional	Consistent discipline/intense focus/continuous hard work/orderly environment
Setting: Non-traditional	Innovative methodology/blended learning/technology rich instruction An extended school day environment/flexible scheduling environment
Setting: Safe	Safe/secure/violent-free/drug-free/clean environment
Setting: Supportive	Caring/collaborative/family cooperative/nurturing/supportive environment Inclusive/diverse/multi-cultured environment

In general, the most well-known and easiest approach in a quantitative content analysis is a word-frequency count (Stemler, 2001). However, this approach has drawbacks in underestimating the matter of each word's significance and missing the importance of concept and context by mistreating synonyms and words with multiple meanings (Stemler, 2001). Moreover, weighting procedures are still underdeveloped for content analyses. For this reason, the study uses binary coding to rate each charter school on the themes indicated in Table 1-1. As the study focuses on whether a charter school mission statement contains any word corresponding to each theme or not, the theme is rated 1 if it is mentioned; otherwise it is rated 0. The study uses the chi-squared test and Fisher's exact test to detect differences in frequency. Examples of coding a mission statement based on Table 1 are shown in Figure 1-1 (Stich & Reeves, 2016).

Example 1.

ACADEMY exists to prove that Detroit children can graduate from high school, enroll in four-year colleges and universities,[1] and be as well-prepared academically[1] and socially[2] as their suburban peers[3] with the foundation of an excellent education that is academically rigorous,[1] warm-demanding, and builds character for leadership[4] in our community and global society.

Coding:

[1] Academics; [2] Social/cultural skills; [3] Target; [4] Specialty

Example 2.

ACADEMY, in cooperation with parents and the community,[1] will provide all students with a clean, safe[2] and caring[3] environment, maximizing academic achievement,[4] improving self-esteem and developing sound character,[5] thereby producing responsible citizens of global society.[6]

Coding:

[1] Partnership; [2] Setting: Safe; [3] Setting: Supportive; [4] Academics; [5] Attitude; [6] Community

Figure 1-1. Examples of coding mission statements

Findings

Proponents of market mechanisms in education have argued that competition and choice could serve as an effective tool to bring diverseness in school objectives, directions and foci. The potential variety among schools becomes an efficient mechanism to satisfy various needs and interests of students. Figure 1-2 illustrates the distribution of themes built upon frequently stated keywords in the 189 charter school mission statements. This shows that the charter school mission statements in the Detroit metropolitan area mostly embrace one theme of academic activity. More than half of charter schools in the Detroit metropolitan area include particular words such as “measurable results,” “data-driven,” “standard based program,” and “test data,” with the intention of accelerating academic achievement. In a similar manner, about one third of mission statements selected for this study place much emphasis on specific goals closely related to academic activities, such as graduation, preparation for higher education and career paths. Following the academic-focused theme, a high frequency in the setting theme suggests that 83 out of the 189 charter schools are more likely to be built on distinctive learning environments. Many of these are in alignment with the environment theme, which calls for collaborative and family school climates as well as clean and safe school settings. Interestingly, twelve charter schools explicitly address traditional settings based on strict orders and discipline through their mission statements.

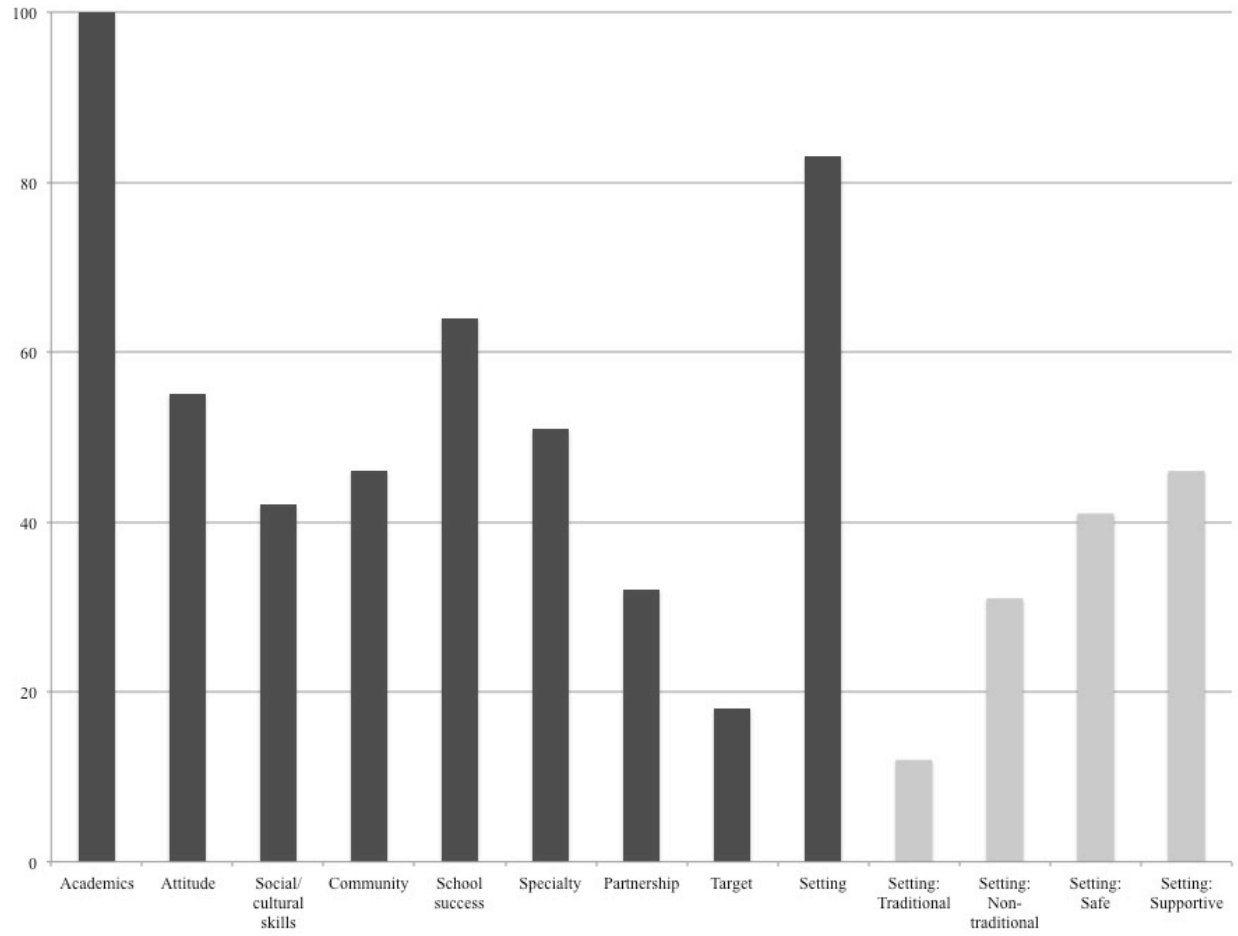

Figure 1-2. Distribution of mission statement themes

Table 1-2. Comparison of Mission Statements

Theme		Adopted		Not adopted	
		Schools	%	Schools	%
Academics		100	52.9	89	47.1
Attitude		55	29.1	134	70.9
Social/cultural skills		42	22.2	147	77.8
Community		46	24.3	143	75.7
School success		64	33.9	125	66.1
Specialty		51	27.0	138	73.0
Partnership		32	16.9	157	83.1
Target		18	9.5	171	90.5
Setting		83	43.9	106	56.1
	Traditional	12	6.3	177	93.7
	Non-traditional	31	16.4	158	83.6
	Safe	41	21.7	148	78.3
	Supportive	46	24.3	143	75.7
χ^2=130.19 ***	χ^2=167.6 ***				

Note: *** $p < .01$; ** $p < .05$; * $p < .10$

A number of charter schools in the Detroit metropolitan area tailor their mission statements to the needs of academic activities and success, and the mission statements in this study infrequently include languages regarding attitude, social/cultural skills, community, specialty, partnership, and target. Since significantly small numbers of charter schools mention all the themes except the academics and setting themes in their mission statements ($p<.05$), the results from this study question the hypothesis that charter school proliferation will generate a diversity of school purposes and models. Rather, charter schools in the Detroit metropolitan area have relatively indistinguishable mission statements, indicating that most of these charter schools operate with a similar purpose. The apparent lack of incentive on the part of charter schools to distinguish themselves from each other leaves prospective parents and students with less-identifiable options in competitive charter school markets.

Table 1-3. Comparison by urbanicity and eligibility for Title I

	Urbanicity				Title I eligibility		
	Large city (n = 87)	Other city (n = 47)	Suburb (n = 55)	Sig.	Non-Title I (n = 35)	Title I (n = 154)	Sig.
Academics	45	21	34		12	88	**
Attitude	15	16	24	***	6	49	
Social/cultural skills	14	11	17		5	37	
Community	22	14	10		7	39	
School success	29	18	17		7	57	*
Specialty	25	12	14		10	41	
Partnership	13	7	12		9	23	
Target	12	2	4		7	11	**
Setting	38	22	23		15	68	
Traditional	3	4	5		0	12	
Non-traditional	13	10	8		4	27	
Safe	18	8	15		9	32	
Supportive	22	13	11		13	33	*

Note: *** $p < .01$; ** $p < .05$; * $p < .10$

Proceeding from the overall finding that charter school mission statements present homogeneity rather than heterogeneity of organization purposes, the frequency tables of mission statement themes by school characteristics are mixed, but to a certain extent consistent with the overall pattern in Tables 1-2. Because many charter schools in the Detroit metropolitan area place general emphasis on academic oriented activities, charter schools appear to make little effort to distinguish themselves on the eight themes, which are equally represented irrespective of location. In Table 1-3, mission statements from charter schools in either urban or suburban areas show a relatively clear similarity in all themes, only excluding the attitude theme. While the charter schools in the city of Detroit tend to focus less on the importance of character-based education, the appearance of the attitude theme is frequently found in charter schools in suburbia and mid/small cities. The mission statements of these charter schools often include specific

phrases such as “character development,” “balanced character” and “developing sound mind,” and employ broad and abstract words such as “tolerant,” “ethical” and “moral.”

The charter schools in the Detroit metropolitan area, using Title I funds, show significant differences in the two themes of academics and target from non-Title I charter schools. According to Table 1-3, the mission statements of the charter schools eligible for Title I, which are disproportionately positioned in urban areas, pay little attention to attracting disadvantaged, or advantaged, children. Rather, the Title I charter schools not only place much emphasis on academic activities, but also endorse straightforward results such as graduation and college access within their mission statements. This over-weighted academic focus offers a consistent claim that charter schools with a high percent of at-risk students highlight measurable academic efforts and outcomes like school completion and career success through their mission statements. Interestingly, all twelve charter schools in which the mission statements stress disciplined, structured and orderly learning environments are identified as Title I charter schools, albeit with non-significance. This partly presents that the Title I charter schools are unlikely to build collaborative and inclusive learning environments in comparison with the Detroit metropolitan non-eligible Title I charter schools, which are often perceived as serving less disadvantaged school-aged children. The general consensus on academic activity and the overt emphasis on traditional practices within the mission statements of the Title I charter schools suggest the need to examine how they are living up to that stated purpose, especially taking into account the underperformance in Michigan charter schools (American Federation of Teachers, 2004; Michigan Department of Education, 2010).

Table 1-4. Comparison by management type and authorizing agency

	Management				Authorizer		
	CMO (n = 28)	EMO (n = 144)	Self-managed (n = 17)	Sig.	University (n = 162)	LEA (n = 27)	Sig.
Academics	11	77	12		82	18	
Attitude	11	41	3		48	7	
Social/cultural skills	4	36	2		35	7	
Community	4	35	7		42	4	
School success	13	47	4		56	8	
Specialty	10	32	9	**	47	4	
Partnership	5	22	5		21	11	***
Target	5	11	2		10	8	
Setting	12	66	5		74	9	***
Traditional	3	9	0		12	0	
Non-traditional	2	26	3		26	5	
Safe	3	36	2		38	3	
Supportive	9	34	3		42	4	

Note: *** $p < .01$; ** $p < .05$; * $p < .10$

When looking at management types, only one significant difference in the mission statements is evident as presented in Table 1-4. While a large number of charter schools in the Detroit metropolitan area are operated under for-profit oriented management organizations, only a small proportion of them includes differentiated program foci such as STEM and health fields in their mission statement. This is in contrast to more than half of the self-managed charter schools promoting their specialties through their mission statements. This uniformity in mission statements of for-profit oriented charter schools, occupying a large charter school market share in Michigan, shows that profit-motivated management organizations are less likely to adopt mission statements which demand costly courses and specialized teachers and staff. Perhaps since the for-profit EMO charter schools depend on yielding profits for their bottom line, they put considerable emphasis on conventional approaches to schooling as a way of maximizing the rate of return on investment in education. Furthermore, as Roch and Sai (2015) indicated, the lack of

autonomy at charter schools operated by for-profit EMOs contributes in part to this focus on traditional program designs. Along with the overall pattern of the charter school mission statements in the Detroit metropolitan area, the findings of Table 1-4 indicate that these mission statements either directly or indirectly shape charter schools in a way that is indistinguishable from current school models.

There are two significant differences in mission statements when examined by charter authorizer. Though higher educational institutions in Michigan authorize a large number of charter schools in the Detroit metropolitan area and examine the missions of charter schools when they authorize them, the mission statements look alike by theme and by authorizing agency. One interesting finding is that charter schools authorized by universities and colleges are more likely to note their distinctive settings within their mission statements. Specifically, charter schools authorized by higher education institutions frequently incorporated specific phrases such as “safe or violence-free environments” and “learning-supportive settings” in their mission statements, which can help distinguish them from common perceptions of local educational agencies (C. A. Lubienski, 2006). On the other side, charter schools approved by local educational agencies are more likely to focus on building partnerships across diverse stakeholders. Given that charter schools tend to demand high parental and community involvement in comparison with traditional public schools governed by local educational agencies (J. Smith, Wohlstetter, Kuzin, & De Pedro, 2011; Weiler & Vogel, 2015), this emphasis on involvement with varied organizations, such as higher educational institutes and business partners as well as parents and teachers, reflects local governments’ need and desire to pool resources beyond closed school systems in order to benefit from diverse funds and charities. However, the latest research points out that charter schools which call for high parental

engagement including volunteering and fundraising are likely to implicitly limit minority and at-risk students' access to the schools (Weiler & Vogel, 2015). In this sense, such emphasis on community connections to innovate schools in charter school mission statements examined by local governments has the potential to increase the unexpected concern of unequal access to charter schools.

Table 1-5. Comparison by the Michigan Scorecard color

	Green (n=0)	Lime (n = 21)	Yellow (n = 78)	Orange (n=23)	Red (n=36)	Sig.
Academics	0	17	43	10	16	**
Attitude	0	9	23	11	4	**
Social/cultural skills	0	7	17	7	8	
Community	0	9	18	5	7	
School success	0	10	25	8	11	
Specialty	0	9	23	5	4	**
Partnership	0	2	13	4	7	
Target	0	2	7	2	1	
Setting	0	7	32	12	23	*
Traditional	0	2	8	2	0	
Non-traditional	0	2	11	5	9	
Safe	0	5	18	2	10	
Supportive	0	4	17	7	12	

Note: *** $p < .01$; ** $p < .05$; * $p < .10$

Since the Michigan Department of Education replaced the Adequate Yearly Progress report cards under the No Child Left Behind Act of 2001 with the Michigan School Accountability Scorecards, Michigan public schools have been color-coded as Green, Lime, Yellow, Orange and Red in order of highest to lowest. There is no Green labeled charter school which is adequately held accountable for the required components of the Scorecards, including student proficiency on state assessments and graduation rates, in the Detroit metropolitan area. Instead, the charter schools classified as Lime, Yellow, Orange and Red are evenly distributed

across the Detroit metropolitan area. In Table 1-5, the color-graded charter schools in the Detroit metropolitan area show general consensus on the four themes of academics, attitude, specialty and setting with relatively high levels of significance. The charter schools with the Lime grade as the second highest scale are more likely to mention either raising test scores or developing distinguishable programs than are the charter schools that receive lower than a Yellow rating. In the same manner, these outperforming Lime and Yellow charter schools tend to include relatively more attitude-relevant contents in their mission statements than the Red-coded charter schools. On the other hand, the mission statements in the underperforming Detroit metropolitan charter schools, particularly coded in Red, place much emphasis on learning environments in comparison with the charter schools under the Lime and Yellow grades.

Discussion

Since considerable autonomy granted to charter schools can generate a diversity of mission statements reflecting a range of educational activities, charter school mission statements could be expected to illuminate the factors distinguishing a given school from competitors through information about core educational purposes and priorities. As a resource to which families can gain easy access, mission statements contain critical information with regard to school objectives and teaching strategies (Hoxby et al., 2009). However, this study finds that overall, apart from the theme of academic emphasis, the charter school mission statements in the Detroit metropolitan area looked essentially alike on many themes. That is, the generic nature of mission statements in charter schools challenges advocates' assertions that competitive incentives will induce a diversity of school options. The results, derived from one of the most competitive charter school markets in the United States, reaffirm that in a market environment

for education, structural diversity such as governance and operations does not necessarily lead to differentiation in educational activities in areas such as curricula and programs (Glatter, Woods, & Bagley, 1997; Starr, 2014).

At the beginning of charter school movements in the 1990s, educational leaders opened charter schools with specific missions and particular pedagogical visions, so that charter schools have elevated local consumer preferences by being responsive to individual diversity. However, similarities in their mission statements along with the rapid growth of charter school markets, as this study suggests, indicate that charter schools, as creatures of state laws, could align themselves to the institutionalized norms and standards in emulation of established schools (Arum, 2000; Curtis, 2012; Huerta & Zuckerman, 2009; Meyer, 1986; Meyer & Rowan, 1977; 1978; Weisbrod, 1998). Charter schools often appear to pursue being seen as a "real school" rather than embracing the strategies of specialization, experimentation, and innovation (Metz, 1989). As organizational theorists would predict, charter schools are apt to become not diverse but isomorphic, that is, similar to established models in order to achieve legitimacy over time (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; 1978; Renzulli et al., 2015). This argument especially parallels recent findings of increasing homogeneity in American public school and school district mission statements since the No Child Left Behind Act of 2001 and the Race to the Top harnessing competition and choice (Schafft & Biddle, 2013; Stemler et al., 2011). The expansion of charter school movements may encourage isomorphic organizational behaviors through focusing on at least symbolic allegiance to academic performance rather than organizational differentiation through diverse and innovative educational goals and activities. Given that standardization in curriculum, educational activities, and teacher qualification in charter schools would be likely strategies for organizational survival and resource allocation in

highly institutionalized and competitive contexts, the isomorphism of charter school mission statements toward symbolically similar objectives may be evidence of a specific route through which charter schools seek legitimacy (Coburn, 2004; Huerta & Zuckerman, 2009; Meyer, 1986; Meyer & Rowan, 1977; 1978).

The more fundamental concern over the lack of distinctiveness within charter school mission statements, which explicitly address educational activities, is that such isomorphic behaviors may function to impede equal access to charter schools. This is distinctively different from the Ancess and Allen study that different themes among small high schools in New York City worked as a signal that a school might serve a particular student group (Ancess & Allen, 2006). When the notable uniformity in mission statements hardly differentiates schools from their competitors, and instead echoes conventional and generic ideals, uniform and standardized charter school mission statements discourage diverse learners and populations from choosing an appropriate charter school. Namely, given that competition between charter schools can hardly yield meaningful options to families with the rights to choose schools, parents have to make decisions on school enrollment based on other more implicit or informal information such as school composition, location, or reputation that typically do not provide insights on educational activities (Bunar & Ambrose, 2016; C. Taylor, 2001). Or, as a large number of families indeed do, they need to rely on knowledge gained from their own networks in exercising the right to choose schools (Altenhofen, Berends, & White, 2016; Fleming, Cowen, Witte, & Wolf, 2015; Holme, 2002; Lareau, 2014). In this sense, the generic contents of mission statements reinforce the role of non-educational factors as a sorting mechanism with implications for inequitable access (Bulman, 2004; Shapiro, 2004). Consequently, neighborhood and community contexts can act as an increasingly strong determinant in accounting for diversification in charter schools

in the same manner that differences among traditional public schools are shaped by variations in communities (Metz, 1989). The commonality in charter school mission statements not only undercuts the potential of charter schools to bring more programmatic diversity to public education, but also breeds risk and uncertainty for families choosing a school.

PAPER 2: DO STUDENTS HAVE EQUAL ACCESS TO CHARTER SCHOOLS?

Background

Local education agencies, which have been extensively involved in US education, have authority to define a permissible zone for enrollment, or so-called school district boundaries and attendance zones (Denton, 1995; Katznelson & Weir, 1985; D. E. Mitchell et al., 2010; Reardon & Yun, 2001). Still, attendance boundaries, as mirroring geographical divides by race, ethnicity, income and education, have generated a wide variation in the quantity and quality of schools, with vast disparities evident in financing across districts (Hochschild, 2005; Robinson, 2007; The Equity and Excellence Commission, 2013). The approach to enrollment based on residence has been a persistent factor in unequal access to education for decades (Briffault, 1996; Brunner, Cho, & Reback, 2012; Henig & Sugarman, 1999).

To weaken the prominent significance of home address in accessing quality schools, market theorists have proposed school choice that offers freedom to leave an assigned school and choose another school irrespective of where students live. According to them, the expansion of school choice has great potential to open up access for students trapped in non-identical districts, which in turn would provide equitable educational opportunities in divided communities (D. W. Black, 2012; Chubb & Moe, 1990; J. T. Scott, 2011; Vergari, 2002; Viteritti, 1999). In particular, charter schools, which are generally classified as public schools and allowed to admit students across school district borderlines, are expected to serve as a vehicle for equal opportunities (Millimet & Collier, 2008).

Drawing from recent findings and implications (e.g. Carnoy, Jacobsen, Mishel, & Rothstein, 2005; Frankenberg et al., 2011; Glomm, Harris, & Lo, 2005; Kotok, Frankenberg,

Schafft, Mann, & Fuller, in press; Stein, 2015), this paper questions the promising notion that the growth of charter school markets would realize the goal of equal education opportunities over geographical restrictions. To clarify the empirical relationship between residential patterns and charter school markets, this study illustrates thematic maps of charter school catchment areas based on the concept of potential spatial accessibility. Then, the spatial patterns are integrated with data on uneven distributions of population according to socioeconomic status indicators. The findings provide detailed insight into how charter schools are distributed within the real-world context of existing inequalities, in terms of access to diverse educational options.

Spatial Access to Charter School Markets

According to Tiebout's landmark theory partially highlighting strong local control and autonomy (Tiebout, 1956), a citizen moves into the most satisfactory of communities among those with various availability and quality of public services. In light of his hypothesis of voting with one's feet, residents' preferences for public services explain how populations are sorted in certain ways as well as how local expenditures efficiently reflect the population preferences. Yet in reality, a decision on where to live cannot be necessary evidence of needs and interests. US housing markets have been historically reproduced by prejudice and discrimination associated with institutional and structural attributes such as race, ethnicity, education, income, and occupation (Butler & Hamnett, 2010; C. R. Farrell, 2008; Frug, 2000; Johnston, Poulsen, & Forrest, 2007; Lichter, Parisi, & Taquino, 2015; Massey & Mullan, 1984; Reardon, Fox, & Townsend, 2015). In such uneven, and unfair, housing markets, the ability-to-pay for higher property taxes and housing prices has greatly accounted for shopping for local public services and facilities that rely upon residents' taxes (Briffault, 1996; Chiodo, Hernández-Murillo, &

Owyang, 2010; Nechyba, 2010; Ryan, 2010; Schwartz & Stiefel, 2014; E. K. Wilson, 2011). These invisible barriers to entry into more satisfactory communities, in combination with general schemes to assign students to nearest schools within school district boundaries, have similarly obstructed access to schools (Denton, 1995; D. E. Mitchell et al., 2010; Ong & Rickles, 2004; Reardon et al., 2000; M. P. Richards, 2014; M. P. Richards & Stroub, 2014; Siegel-Hawley, 2013).

Under these circumstances, market metaphors have rapidly spread in public education as part of an effort to reduce or eliminate geographical barriers to equal access to better and more diverse schools (Bodine et al., 2008; Herbert & Thomas, 1998; Kenn, 2001; J. T. Scott & Wells, 2013). To diminish the strong relationship between residential patterns and school access, some scholars and policy makers, especially who place much weight on the potential of school choice policies for democratic equity, have encouraged the establishment of charter schools which are prohibited from either drawing school zone lines or using distance criterion necessary for admission. Proponents of charter schools have maintained that parents, who were dissatisfied with academic performance at local schools, would transfer their children to schools across their attendance zones, which some parents indeed did (Finn, Manno, & Vanourek, 2001; Gill, Timpane, Ross, Brewer, & Booker, 2001; Kleitz, Weiher, Tedin, & Matland, 2000).

Contrary to the theoretical aspiration, previous literature has consistently raised concerns that access to charter school markets is not unaffected by geography. Many parents, albeit eligible for opting out of their geographical designed zones, prefer enrolling their children in a neighboring school rather than a remote school (Burgess, Greaves, Vignoles, & Wilson, 2015; Glazerman & Dotter, 2016; Hastings et al., 2005; J. D. Marshall et al., 2010; Rhodes & DeLuca, 2014). The financial burden of travelling farther away also discourage students from leaving a

current school (Cullen, Jacob, & Levitt, 2005; T. M. Davis, 2013; Gorard & Fitz, 1998; Holmes, DeSimone, & Rupp, 2003; K. J. R. Phillips, Hausman, & Larsen, 2012; Reay & Lucey, 2003; Smrekar & Goldring, 1999; Urban Institute, 2017). Most of families rarely move into a new community for better access to other schools (Renzulli & Evans, 2005; Rhodes & DeLuca, 2014). Furthermore, charter schools give enrollment priority to students residing within home districts when they are oversubscribed. Such local residency preferences reinforce the significance of proximity in public education, as did the traditional enrollment policy offering enrollment priority to students whose siblings have enrolled in the school (Hamnett & Butler, 2011; 2013; Ryan, 2010). Therefore, as several studies pointed out (Gibson & Asthana, 2000; Hay, 1995; Kraus, 2008; Le Grand, 1991; C. A. Lubienski, 2005; Makarewicz, 2013), simply breaking down political boundaries and offering the right to choose a charter school in the market does not necessarily mean an automatic right to use.

As parental decision on charter school enrollment is hardly separated from where students reside (Abdulkadiroğlu & Sönmez, 2003; C. A. Bell, 2007; 2009b; Herbert, 2000; Holme, 2002), charter schools are likely to utilize the location-friendly strategies to respond to competitive incentives in market hierarchies. As a case of exploiting locational advantages and disadvantages, a number of charter schools open and move into school districts with high expenditure per pupil and teacher salary, and in communities with a high proportion of college educated and employed adults and fewer minorities (Bifulco & Buerger, 2012; Glomm et al., 2005; Gulosino & Lubienski, 2011; C. A. Lubienski, Gulosino, & Weitzel, 2009). Some charter schools in Detroit, Washington, DC and New Orleans implicitly tailor desirable applicant pools by avoiding communities with risky and costly students (C. A. Lubienski et al., 2009). The latest study similarly reveals that several charter schools under competitive pressures to renew charter

contracts and improve academic performance disseminate marketing materials only to parents with certain backgrounds in given areas (Jabbar, 2016).

Given the shared interest in location among charter schools and parents, it is not surprising that charter schools serve students from the similar enrollment pool that nearby traditional schools in segregated areas had served (Wamba & Ascher, 2003). As the results from the growing body of charter school research indicated, charter school access for better or worse becomes linked to geographies constructed by demographic features, social capital and economic characteristics. This tells us that racially and socioeconomically segregated landscapes substantially contribute to the likelihood of evincing the risk of unequal access to charter schools (Hastings et al., 2005; Jacobs, 2013; Kleitz et al., 2000; Lauder & Hughes, 1999; Orfield & Monfort, 1992; Ryan & Heise, 2002). However, little research has presented adequate reflections on equal access to charter schools in fragmented neighborhoods, since the extant research has unclearly defined potential spatial access to charter schools, which are obviously distinguished free from traditional school catchment areas.

Potential Spatial Accessibility

Much research has been done on unequal spatial distribution of public services such as medical care, playgrounds, parks and preschools (Knox, 1978; Kwan, 1998; McLafferty, 1982; Mladenka, 1989; Neuman & Celano, 2001; Nicholls, 2001; Oh & Jeong, 2007; Pinch, 1987; Rodríguez, Amador, & Tarango, 2016; Shen, 1998; Talen & Anselin, 1998; Yoon & Srinivasan, 2015). Its findings have commonly stressed the significance of spatial access by providing meaningful evidence that varying levels in the ability to access interact with a range of social and economic opportunities. In a similar manner, the literature on the geographic adequacy of education providers in markets has increasingly questioned the potential relationship between

disparities in charter school access and pre-existing residential patterns (Card, 1993; Galster & Killen, 1995; Gulosino & d'Entremont, 2011; Rosenbaum, 1995; Sá, Florax, & Rietveld, 2006; Turley, 2009). Yet, a number of the previous studies about charter school access focus on the utilization of school choice through analysis on aggregated enrollment data and the Census data, so largely demonstrate non-spatial factors from the broad spectrum of equal access (e.g. Frankenberg et al., 2011; Garcia, 2008a; Rapp & Eckes, 2007; Renzulli & Evans, 2005; RPP International, 2000; Sohoni & Saporito, 2009).

In the multi-dimensional concept of access (Cromley & McLafferty, 2011; Gulliford et al., 2002; Penchansky & Thomas, 1981), spatial access to a particular public service builds on availability and accessibility. Availability refers to the number of services that a client can choose in a certain area. If available schools are adequately concentrated into an area with many students, the area can be described as high availability. On the grounds that many charter schools are inefficiently clustered in certain areas (Frankenberg et al., 2011; Glomm et al., 2005; Saultz et al., 2015), charter schools have generally shown a high regional availability in urban cores and their suburban rings. Along with other terms of spatial interaction and potentiality of contacts with activities or supplies (Hansen, 1959; Rietveld & Bruinsma, 1998), accessibility is defined as "the spatial distribution of potential destinations, the ease of reaching each destination, and the magnitude, quality and character of the activities found there" (Handy & Niemeier, 1997. p. 1175). An area with low school accessibility is identified if school-aged children cannot easily reach schools due to long distance, or there is no affordable and available transportation means. Research on accessibility between students and charter schools can answer for inequitable access to charter schools from a distinct standpoint of the spatial relation.

Unlike the case for traditional public schools where spatial access has been discussed in accordance with school district boundary lines, many states allow children to enroll in any charter school in either urban cores or their suburban fringes (Orfield, 2014; Siegel-Hawley, 2014). Such open enrollment schemes of charter school initiatives address practical issues and difficulty in defining the catchment area of each charter school, and thus little progress has been made to measure spatial accessibility to charter schools. For instance, many scholars have simply identified a charter school's catchment area with the traditional boundaries including school districts and attendance zones, and have relied upon a single statistical geographic unit to which the charter school belongs (e.g. Garcia, 2008b; Ritter, Jensen, Kisida, & Bowen, 2016; Saporito & Sohoni, 2006; 2007; Sohoni & Saporito, 2009). Alternatively, potential catchment areas have been drawn in a circular buffer with a given mile radius of charter schools, by combining parental preference for proximity as a convenience factor (e.g. C. A. Bell, 2009b; Burgess, Greaves, Vignoles, & Wilson, 2011; Cobb & Glass, 1999).

While these technical approaches have brought about remarkable advances on charter school access research, there are several limitations in explaining the connection between accessibility patterns and underlying communities. Utilizing a pre-designed geographic zone and a Euclidean distance oversimplifies charter schools' surroundings, and furthermore overlooks one major feature, i.e. non-residency requirement for enrollment, of charter schools (Dillon, 2008; Müller, 2011; Pacione, 1989; Talen, 2001). Also, previous measures of spatial access to charter schools have underestimated different opportunities and constraints of access to choice such as distance, transportation, and availability (Dillon, 2008; Gibbons & Machin, 2006; K. Larsen & Gilliland, 2008; D. M. Smith et al., 2010; Talen, 2001; Witten, Exeter, & Field, 2003; Zenk et al., 2005). Provided that access to competitive school markets becomes classed through

spatial accessibility and housing affordability (Fortney, Rost, & Warren, 2000; Goyette, 2008; Müller, 2011), flawed representation of accessible zones could hardly provide accurate and meaningful information about charter school access. In this sense, research on spatial access to charter schools requires a new illustration, which comprehensively deliberates not only geographical proximity based on commutable distances and convenient times, but also accessibility based on street networks and charter school capacities.

Data and Methods

This study explores the spatial equality of potential accessibility to primary charter schools through examining one highly segregated metropolitan area in the US. The first part of this study illustrates patterns of potential spatial accessibility of the area's charter schools, which do not require any resident proof for enrollment. This process subdivides a geographically continuous area according to features of either rich or deficient accessibility. The next part tests the hypothesis that students are equally able to access charter schools irrespective of their residence, by comparing housing patterns in the research area with distributions of potential spatial accessibility.

Charter Schools in New York

Since the New York state government passed the charter school law in 1998 under the Republican governor and the first ten charter schools in New York opened in 2001, the New York charter school law has strictly limited the total number of charter schools across the state. However, high demand on charter schools has increased from the cap on the number of charter schools at 100 up to 460 charter schools during the governorship of several Democrats. Among 460 charter schools, 260 schools are reserved for the board of regents and the board of trustees of

the State University of New York, and one hundred fourteen charter schools are reserved for New York City. Though the conversion from an existing public school to a charter school is not subject to the cap policy, only the board of education of a school district can authorize this conversion. Charter school operation has been approved by multiple agents including the board of education of each school district, the chancellor of New York City, the board of trustees of the State University of New York and the board of regents of New York State. This variation in charter school authorizers in New York partly leads a sizable number of charter schools run by either for-profit or non-profit education management organizations [EMO]. This is consistent with previous findings that states with multiple charter school authorizers tend to have a greater portion of for-profit EMO charter schools in the total charter school market than states with a single authorizer (Miron & Horn, 2002; Miron & Nelson, 2002; Teske, Schneider, & Cassese, 2005). Among the 209 New York charter schools in the 2012-13 school year, about 10 percent were run by for-profit education organization managements, and about 30 percent were operated by non-profit charter management organizations (Miron & Gulosino, 2013).

This study extends the research area to an entire metropolitan area, since geographic divides in US metropolitan areas are not simply described as affluent suburbs and poor cities (Florida & Bendix, 2015; Frey, 2011). One hundred sixty four out of 209 charter schools are located in the New York metropolitan area, stretching out across seven counties (Bronx, Kings, Nassau, New York, Queens, Richmond and Westchester). To clarify the spatial relationship between accessibility gaps and housing patterns, this research focuses on 122 charter schools in which the highest grade offered is lower than 8, serving students aged 5 to 13 years. Restricting attention to the primary charter schools in the New York metropolitan area allows this research to draw significant implications for potential spatial accessibility to charter schools, for

controlling for effects of small school reforms which mainly offer choice to high school students at lower performing large schools in less advantaged areas (DiMartino & Jessen, 2016; Hemphill & Nauer, 2009; Iatarola, Schwartz, Stiefel, & Chellman, 2008). The physical locations of charter school campuses, excluding network headquarters and administration offices, are extracted from the state and local governments and charter school websites, and from the Common Core Data of the National Center for Education Statistics in the 2012-13 school year. These locations are geocoded in ArcGIS 10.3, and then the geocoded addresses are assigned on each Metropolitan Statistical Area from the 2010 TIGER/Line shapefile of the US Census Bureau.

As the New York state government encourages the establishment of charter schools with the purpose of providing better learning opportunities particularly for students at risk of academic failure (NY CLS Educ, Title II, Art. 56), many charter schools are concentrated in particular regions in New York City, such as Harlem and South Bronx (Hoxby & Murarka, 2009). In particular, the New York City mayor's strong commitment to charter schools, with support from national and local philanthropic organizations, boosts the establishment of charter schools in New York City (Fullan & Boyle, 2014). As a result, students in the New York metropolitan area, marked by a well-developed public transportation system, are theoretically able to have a high degree of spatial access to charter schools. When the number of applicants for charter school enrollment exceeds the capacity, the schools can give priority for enrollment to students whose siblings are already enrolled in schools or who reside in a community where a charter school is located. Charter school students in New York are not eligible for public assistance with transportation, but instead a school district can enter into a contract for related transportation services with charter schools.

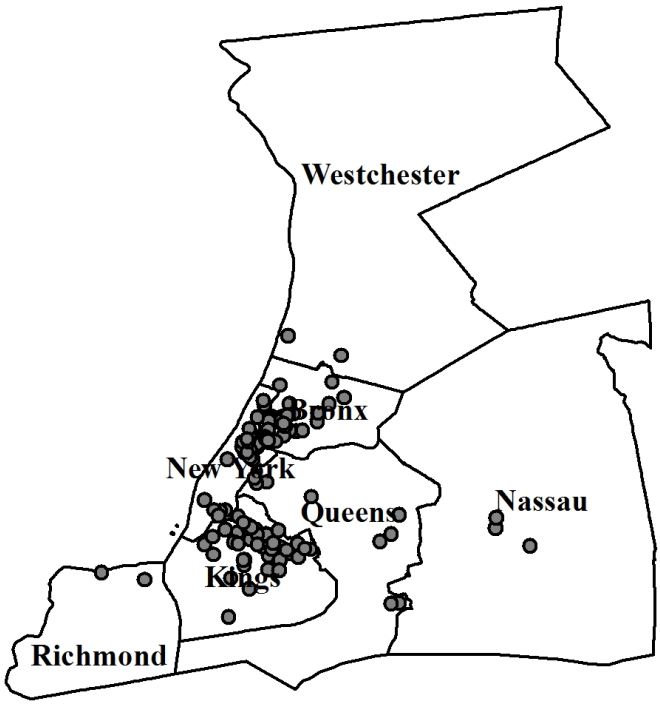

Figure 2-1. Charter school locations in the New York Metropolitan Area

Estimate of Potential Accessibility

Within the designed research area, an empirical parameter selection for a commutable distance and time of school-aged children plays a critical role in estimating the value of potential spatial accessibility. Older students tend to walk or bike farther than students aged 5 to 11 years (Fyhri, Hjorthol, Mackett, Fotel, & Kyttä, 2011; Martin & Carlson, 2005; McDonald, 2008; T. E. McMillan, Day, Boarnet, Alfonzo, & Anderson, 2006), but a large proportion of US students are unlikely to walk to school (Dellinger & Staunton, 2002; Martin & Carlson, 2005; National Center for Safe Routes to School, 2013). According to literature on transportation (McDonald, 2007; McDonald, Brown, Marchetti, & Pedroso, 2011), 45% and 40% of total students indeed depend on automobiles and school buses respectively, and only 13% commute from home to school by walking or biking. One survey result similarly reports that 77% of the sample students travel 12.3 minutes by automobile for each school trip (Ulfarsson & Shankar, 2008). Moreover, this preference of American parents to drop their child off at school for convenience reinforces the argument that the ownership of automobiles and the transportation systems largely determine quantity and quality of access to public services in metropolitan areas (Gautier & Zenou, 2010; McDonald & Aalborg, 2009; T. E. McMillan, 2005; Schlossberg, Greene, Phillips, Johnson, & Parker, 2006; Shen, 1998; Sirard & Slater, 2008; Yang, Abbott, & Schlossberg, 2012). Therefore, the patterns and trends of students' travel to charter schools are more influenced by time than by physical distance, especially taking into account street conditions and multiple routes in metropolitan areas.

Apart from the general scheme of student trip to and from school, participation in choice programs requires extra commuting efforts, such as farther school journey and correspondingly greater demand on cars (District of Columbia Public Charter School Board, 2015; K. Larsen,

Buliung, & Faulkner, 2015; Miron & Horn, 2002; Steiner, Crider, Betancourt, & Hall, 2006; E. J. Wilson, Marshall, Wilson, & Krizek, 2010; E. J. Wilson, Wilson, & Krizek, 2007; Yang et al., 2012). As a case in point, the median distance from home to charter school in Detroit is 3.3 miles, while the Detroit public school students travel 2.2 miles (Tanner, 2015). Guided by such practical evidence, this study sets accessibility impedance of driving time as 20 minutes for students aged 5 to 13 years, longer than the one for neighborhood school students. Each charter school catchment area for this study is constructed with the Network Analyst extension tool in ArcGIS Desktop 10.3. The Network Analyst extension tool, which works with a compiled street network data set, allows us to display routes and project driving times through turn-by-turn directions. Thus, catchment areas by each census tract can be distinctively drawn by taking into account realistic street conditions such as speed limits, signpost information and one-way streets. Illustrations employing a road-based network distance would offer more realistic findings, as well as minimize a false representation of potential accessibility on the basis of a Euclidean linear-distance.

This study calculates accessibility employing the enhanced two-step floating catchment area model developed by Radke and Mu (Dai, 2011; Luo & Qi, 2009; Radke & Mu, 2000). A floating catchment area approach involves the ratio of schools to student density within an area centered at a school location (Luo & Qi, 2009; Luo & Wang, 2003; McGrail & Humphreys, 2009; Radke & Mu, 2000; Wan, Zhan, Zou, & Chow, 2012; Wan, Zhan, Zou, & Wilson, 2013; F. Wang & Luo, 2005; S. Williams & Wang, 2014). The enhanced two-step floating catchment area method can differentiate accessibility within a catchment by multiplying weights of accessibility measures (Dai, 2010; Kwan, 1998; Langford et al., 2012; Lian, Struthers, & Schootman, 2012;

Luo & Qi, 2009; L. Wang, 2007). The enhanced two-step floating catchment area method is estimated as Equation 2-1:

$$R_j = \frac{S_j}{\sum_{k \in \{t_{kj} \le t_0\}} P_k W_{kj}}$$

$$A_i^{EFCA} = \sum_{j \in \{t_{ij} \le t_0\}} R_j W_{ij} \qquad \text{Equation 2-1.}$$

$$W_{ij} = \frac{e^{-0.5(t_{ij}/t_0)^2} - e^{-0.5}}{1 - e^{-0.5}}$$

where R_j is the school enrollment-to-student number ratio of charter school j, S_j is the number of charter school enrollments within a threshold travel time from charter school j, k is all census tracts within a threshold travel time from location j, t_{kj} is the travel time between k and j, t_0 is a threshold travel time, P_k is the number of children of census tract k, Ai^{EFCA} is the accessibility at census tract i, charter school j falls within the catchment area of travel time centered at census tract i, t_{ij} is the travel time between i and j, W is the time weight when charter school j falls within the catchment area centered at census tract i or k. A large value of A_i^{EFCA} indicates that location i has better accessibility to service.[1]

Spatial Regression Analysis

Given spatial patterns of segregation and stratification in US metropolitan areas, a value observed in a given census tract tends to be highly related to the values observed at the nearby ones. In other words, the dependent variable at census tract i is under the influence of the selective variables in both census tract i and its neighboring ones. When spatial characteristics are likely to be clustered or dispersed together in space, spatial autocorrelation not only violates

[1] See for detail in Appendix A

independence between variables observed for residential patterns, but also fails to satisfy the underlying assumptions of linear regression analysis. Therefore, socio-geographic research like this study requires the test of spatial autocorrelation by feature at adjoining areas. This process confirms if the errors are uncorrelated and the dependent variables are independent, before statistical analyses (Baller, Anselin, Messner, Deane, & Hawkins, 2001). The spatial autocorrelation for residuals of accessibility is tested by the Moran's I statistics as Equation 2-2:

$$I = \frac{n}{\sum_{i=1}^{n}\sum_{k=1}^{n} w_{i,k}} \frac{\sum_{i=1}^{n}\sum_{k=1}^{n} w_{i,k}(x_i - \overline{X})(x_k - \overline{X})}{\sum_{i=1}^{n}(x_i - \overline{X})^2} \qquad \text{Equation 2-2.}$$

where $w_{i,k}$ is the spatial weight between census tract i and k, n is the total number of census tracts, and x_i is a value of the spatial feature at census tract i.

Since statistically significant spatial autocorrelation is detected, this study employs the spatial lag regression model instead of the ordinary least-squares regression model, in order to investigate the relation between gaps in spatial access to charter schools and uneven residential patterns. The spatial lag model yields statistical inference along with spatial dependency, in a similar manner to the instrumental variables regression model, as in Equation 2-3 (Baller et al., 2001; Kelejian & Prucha, 1999):

$$y = \beta_0 + \beta x + \rho W_y + \varepsilon \qquad \text{Equation 2-3.}$$

where y is the accessibility, β is the coefficient of the selected variables, ρ is the spatial coefficient, W_y is the spatially lagged accessibility using the first-order queen contiguity weights matrix $w_{i,k}$, and ε is the errors. If there is no spatial autocorrelation across areas, a value of ρ is equal to 0. This study works the spatial regression with GeoDa developed by Luc Anselin and R for statistical data analysis (Anselin, Syabri, & Kho, 2006). Guided by voluminous literature on area-based socioeconomic measures, including research on segregation and stratification, this study identifies 14 demographic and socioeconomic variables from race, ethnicity, income and poverty, education, housing, employment and occupation (Darden & Kamel, 2000b; Ellen & Turner, 1997; Iceland, 2004; Krieger et al., 2002; Krivo, Peterson, & Kuhl, 2009; Massey & Denton, 1988; 1993; Reardon & Bischoff, 2011; W. J. Wilson, 2012). Each variable is derived from the 2009-2013 American Community Survey 5 year estimates of the US Census Bureau.

Table 2-1. List of selected variables

Variable	Description
BLACK	% African-American, but not Hispanic Population
HISPANIC	% Population with Hispanic or Latino origin
LOWEARNING	% Population 16 years and over with earnings between $1 and $29,999 in the past 12 months (approximate the median)
POV_POP	% Population below poverty level in the past 12 months
PAI	% Households with public assistance income in the past 12 months
NODEGREE	% Population 25 years and over who do not hold at least Associate degree
DROPOUT	% Population 18 to 24 years who do not graduate higher schools (including equivalency)
UNEMPLOYED	% Female 16 to 59 years and Male 16 to 64 years unemployed in civilian labor force
OCCUPATION	% Population 16 years and over who work in sales and service occupations
VACANT	% Vacant housing units
OVERCROWDED	% Housing units with more than 1.01 occupants per room
LOG_VALUE	Logged value of owner-occupied housing units
LOG_RENT	Logged contract rent of renter-occupied housing units
ENGPOOR	% Population 5 to 64 years who do not speak English well or at all

Findings

The selected 122 charter schools serving K through 8th grade students are located in particular areas encompassing New York City, proportionate to large school-aged population in the selected study area. Therefore, as presented in Figure 2-2, New York City is remarkably gradated in dark colors for a high degree of accessibility to charter schools. This implies that children aged 5 to 13 years who reside in New York City have a greater likelihood of accessing a charter school within a convenient travel period, since a large number of charter schools are clustered in conjunction with a high prospective demand. While the values of accessibility tend to fall dramatically at the fringes of the New York metropolitan area, the values are likely to incrementally decline toward the three regions adjacent to New York City. Specifically, the particular regions of Bronx County in the North, Kings County in the South, and Queens County in the East, closely neighboring New York City, present high accessibility values. Children in the southern Bronx area, adjacent to the northern New York, have greater access to charter schools in comparison to other surrounding regions. Also, the western Queen County across the East River from Manhattan shows the rich accessibility to charter schools, considering that young school-aged children are less likely to cross bridges for school trip. As spatial access to charter school markets, albeit with well-developed commuting systems and prospective demands on charter schools, is rarely evenly distributed over the New York metropolitan area, accessibility to charter schools in the New York metropolitan area are dependent on proximity.

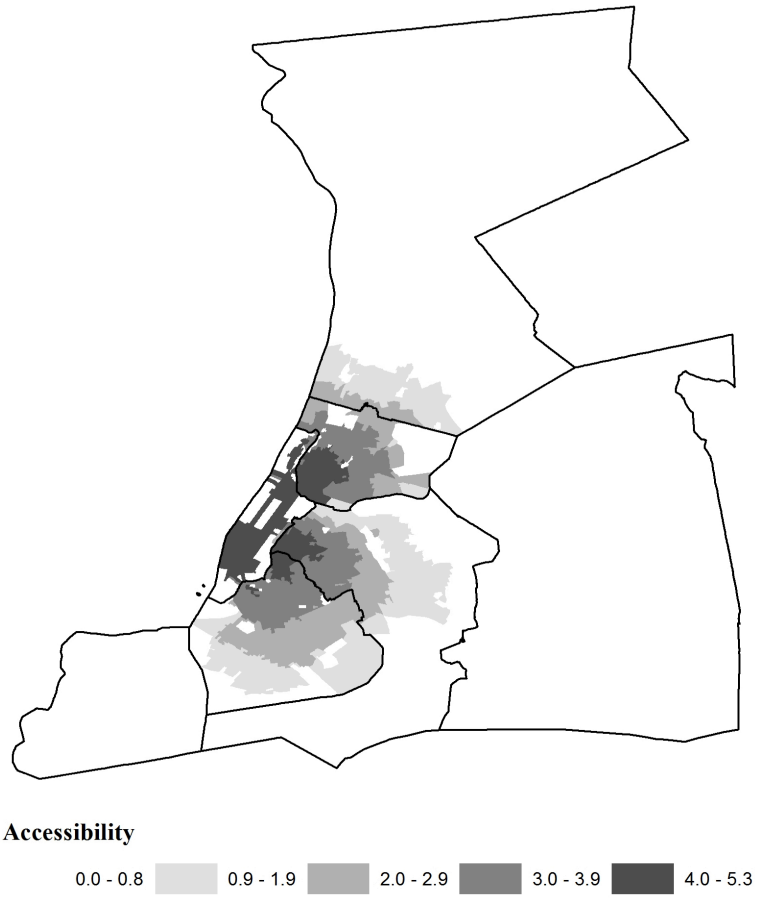

Figure 2-2. The geographic distribution of potential accessibility to primary charter schools in the New York metropolitan area

Table 2-2. OLS and spatial lag regression for potential accessibility

	OLS model			Spatial lag model		
	Coefficient	Std. error	*p*	Coefficient	Std. error	*p*
BLACK	0.978	0.123	0.000	0.153	0.062	0.014
HISPANIC	2.628	0.169	0.000	0.549	0.087	0.000
LOWEARNING	-2.079	0.305	0.000	-0.328	0.152	0.031
POV_POP	4.645	0.334	0.000	0.648	0.169	0.000
PAI	0.444	0.918	0.629	0.308	0.459	0.503
NODEGREE	-2.845	0.217	0.000	-0.706	0.112	0.000
DROPOUT	-0.440	0.249	0.077	-0.086	0.124	0.489
UNEMPLOYED	-0.077	0.498	0.877	-0.494	0.249	0.047
OCCUPATION	0.545	0.372	0.143	0.580	0.186	0.002
VACANT	4.998	0.434	0.000	0.820	0.219	0.000
OVERCROWDED	3.772	0.505	0.000	0.707	0.253	0.005
LOG_VALUE	-0.004	0.009	0.644	0.012	0.005	0.006
LOG_RENT	0.106	0.021	0.000	0.047	0.011	0.000
ENGPOOR	0.306	0.431	0.478	0.042	0.215	0.844
Spatial lag (ρ)				0.865		0.000
Intercept	1.531	0.115	0.000	-0.122	0.080	0.130

Note: Cells are shaded if a *p* value is less than .05.

To unveil the relationship between housing patterns and accessibility distributions, Table 2-1 shows the result of the spatial lag regression, as well as compares with the result of the OLS regression. According to the OLS model, statistically significant impacts on accessibility are built upon the eight variables at a census tract: The proportion of African-American population, the proportion of Hispanic population, the percent of population earning under $30,000, the percent of population below poverty level, the percent of population 25 years and over who do not hold a college degree, the vacancy rate, the proportion of housing units occupied with more than 1 occupant per room, and the logged contract rent. Specifically, the increases in the proportion of low earning populations and the percent of less educated populations affect the decrease in charter school access to young children in a given census tract. Access to charter schools are more likely to be offered primary school students who reside in areas with larger

minority populations, fewer low-income populations, greater populations below poverty level, higher vacancy rates, more overcrowded housing units, and higher rent prices.

Although it is not surprising that the close relationship between accessibility values and housing features, the estimates from the OLS regression can be inappropriate when segregated residential patterns across the New York metropolitan area cause any impact on the higher values of accessibility centered in several regions. Indeed, this study reveals a strongly positive spatial autocorrelation for residuals (Moran's I=.840; p<.000) using Moran's I statistic. The presence of spatial autocorrelation indicates that application of traditional statistical tests to this study would yield biased and misleading coefficient inferences. Apart from significant spatial autocorrelation for residuals in OLS presented by Moran's I statistics, the model diagnostics also suggest an improvement of fit for the OLS model in Table 2-1, which explains only 30 % of an accessibility variation (adjusted R^2=0.336). In contrast, the spatial lag model has greater R^2 (R^2=0.842) and Log likelihood values in spite of the limitation that a value of R^2 is not considered a suitable measure of model fit for spatial regression.

Table 2-1 shows the coefficients from the spatial lag model by controlling for spatial autocorrelation where a high value of accessibility in a certain census tract is determined by the selected values of nearby census tracts as well as the geographic attributes at the single census tract. As the spatial lag model, which includes a spatial-lagged dependent variable, presents overall declines in coefficient estimations, the results suggest that a high or low accessibility value in a given census tract is affected by some extent of patchiness in housing attributes. Among the significant 11 non-spatial variables in the spatial lag model, the eight factors, which lead to notable changes in accessibility in the OLS model, yield decreased variations of the potential spatial accessibility, but are still significant. For instance, the proportion of population

with Hispanic or Latino origin, which brings about a substantial increase in accessibility in the OLS model, produces a small increase in accessibility with a 0.01 significance level due to its declining coefficient.

In a similar manner to the OLS model, the spatial lag model accounts for the positive relation between areas with rich spatial accessibilities and areas with larger populations from racially and ethnically minority groups and under poverty level. A high vacancy rate and a large number of overcrowded housing units also draw considerable variations in accessibility. This accessibility pattern obtained from the combination of the five non-spatial variables requires the additional understanding of the New York metropolitan region. In general, a large volume of literature studying great metropolitan areas has defined an urban community as space with disproportionately high populations from disadvantaged backgrounds (W. A. V. Clark & Ware, 1997; W. A. V. Clark, Anderson, Östh, & Malmberg, 2015b; Frey, 2011; Logan, Stults, & Farley, 2004; Massey & Denton, 1993; Morrill, 1995; Orfield & Frankenberg, 2014; Sandoval, 2011). The rapid housing vacancy has occurred in city cores since the recent economic recession, and these urban areas have been unable to supply affordable housing units with sufficient bedrooms for school-aged children (Lipman & Hursh, 2007; Massey & Denton, 1993; W. J. Wilson, 1987). Therefore, the higher values of accessibility in New York City of Figure 2-2 obviously reflect the common attributes of urbanized areas, even including the mismatch between supply and demand of housing.

The spatial lag regression model in Table 2-1 indicates that the greater proportion of people who have no experience of higher education increases the spatial barrier to charter schools. While the OLS model points out that the percent of population 16 years and over who are unemployed in civilian labor force is insignificant in affecting spatial accessibility, the spatial

lag model finds that children aged 5 to 13 years in areas with higher employment rate are more likely to live within a permissible travel time for charter school enrollment. Areas with a more educated and employed population are likely to have better accessibility to charter schools, but this increase in accessibility is related with the populations with occupations classified as sales and service, and with earning less than $30,000. In light of the close relationship between educational attainment, occupational hierarchy and income distribution, the statistics from the spatial lag model demand special attention to socioeconomic backgrounds such as education, employment and occupation at a given census tract. Namely, charter school access in the New York metropolitan area does not require a spatial arrangement of population with professional occupations reflecting high earnings. Additionally, the statistics from the spatial lag model raise the concern about housing affordability. In Table 2-1, the finding derived from the OLS model shows that only logged contract rents are significant in affecting spatial accessibility. Yet, the result from the spatial lag model indicates that children aged 5 to 14 years in areas with lower housing values either owned or rented are less likely to live within a convenient travel time for charter school enrollment. These findings lend support to the previous research that some families are willing to pay more for housing to have access to certain schools with particular features (S. E. Black, 1999; Dougherty et al., 2009).

Discussion

The paradigm of school assignment has been shifting its main value from diversity, which has initiated a court-ordered desegregation plan, to proximity, which justifies current assignment policies based on home addresses (Ayscue, Siegel-Hawley, Kucsera, & Woodward, in press). However, geographical divides for school enrollment are profoundly interconnected

with the fragmentation of US metropolitan regions by race, ethnicity, income and education level (Denton, 1995; Katznelson & Weir, 1985; D. E. Mitchell et al., 2010; Owens, 2016; Reardon & Yun, 2001). As residence plays a crucial role in accessing quality schools, unequal access to education has been a substantial problem besetting American education for decades (Brunner et al., 2012; Henig & Sugarman, 1999). Traditional student assignments policies, which put much emphasis on neighboring schools, have often been criticized for reinforcing the significance of housing for school access. Geographical discontinuity shaped by attendance zones has allowed many scholars to investigate the reproduction of educational inequality through differences in housing prices, demographic compositions, and academic performances on either side of school zones (e.g. S. E. Black, 1999; Chiodo et al., 2010; Clapp, Nanda, & Ross, 2008; Gibbons, Machin, & Silva, 2013; Holme, Finnigan, & Diem, 2016; Lavy, 2010; Rothwell & Massey, 2010).

With the rise of neoliberalism, choice has been partly expected to become a vehicle for advancing the civil rights goal. This promising expectation has boosted the number of charter schools across the United States, and numerous studies have examined equal opportunity of access to charter schools. Inspired by the potential of charter schools that includes the absence of school attendance zones through choice, this study examines the connection between spatial access to charter schools and non-spatial socioeconomic features. The study employing the spatial lag regression analysis shows that children in areas less accessible to charter schools tend to be more exposed to communities with more populations of color, fewer educated adults, higher unemployed groups, lower-earning populations, and less expensive housings. Therefore, the findings, which review physically accessible charter schools from the standpoint of children aged 5 to 13 years, offer empirical evidence that access to charter school differs depending on

demographic characteristics and socioeconomic attributes in significant combination with geography. In other words, accessibility is unevenly spread out similar to the distributions of aspatial features in highly fragmented metropolitan areas.

As access to charter schools in the New York metropolitan area is entangled with residential characteristics even controlling for the effect of proximity, children's place of residence considerably account for potential spatial accessibility to charter schools. This conclusion not only challenges the argument of charter school advocates that charter schools equally open to all irrespective of geographic constraints, but also casts doubt on the claim that charter schools bring about significant changes to politically designed and strictly operated school attendance boundaries. This implies that the New York metropolitan charter schools exercise a distinct form of the zoning power to exclude a certain type of children that they consider less desirable, from the traditional legal power which local governments have used to design spatially accessible regions (Frug, 2000). These emergent findings support that neighborhood characteristics might be converted to transformative assets and resources accessing charter schools (Phillippo & Griffin, 2016; Shapiro, 2004), even though the complexity of neighborhood as place has allowed residents to differently establish their communities on multifaceted standpoints beyond geographical proximity (Coulton, Chan, & Mikelbank, 2011; Coulton, Jennings, & Chan, 2013). Indeed, a number of studies have shown that some parents express willingness to pay a premium for charter school access by moving into areas with higher housing values, in the same manner that a desire to access better schools leads to increases in housing prices under traditional zoning policies (S. E. Black, 1999; K. J. Hayes & Taylor, 1996; Imberman, Naretta, & O'Rourke, 2015; LaFleur, 2016; Patrick, 2015). Consequently, the

findings of this study indicate that geographical advantages or disadvantages potentially return to quality educational opportunities, or missed opportunities, with regard to charter school access.

Spatial access, as an advanced form from simply distributing chances to choose charter schools, is of course distinguished from enrollment. Also, enrollment in charter schools does not always guarantee any progress in academic record as found in mixed, and often negative, results of charter school performances (American Federation of Teachers, 2004; Center for Research on Education Outcomes, 2013; S. T. Lubienski & Lubienski, 2006; A. C. Nelson et al., 2004; Winters, 2012; Zimmer et al., 2009). Nonetheless, equitable access to charter schools may be the first step to offering equal opportunity for diverse education in metropolitan areas with pre-existing residential segregation (Zimmer et al., 2003). In addition, there exist non-negligible research that urban charter schools improve academic achievement of disadvantaged students who have been characterized as poor, non-White, and underperforming (Angrist, Pathak, & Walters, 2013; Center for Research on Education Outcomes, 2015; M. A. Clark, Gleason, Tuttle, & Silverberg, 2015a; Cohodes, 2016; Curto & Fryer, 2014). In this context, the lack of opportunity to geographically access charter schools, even when all other things are equal, can function as an obstacle to equal and equitable educational opportunity. Considering the possibility that injustice is reproduced spatially (Dikec, 2001; Soja, 2011; Tate, 2008), potentially unequal access to charter schools found in this research calls for future research on links with actual access to charter schools, which in turn would help understand how parents respond to competitive markets with geographic preferences and impedances.

PAPER 3: DO NEW SCHOOLS HARM PUBLIC SCHOOL STUDENTS?

Background

For the last two decades, market forces have driven considerable changes to current school systems in attempts to resolve existing social problems as well as to revamp local public schools. In particular, large urban cores with complex issues have often been laboratories for market-based educational policies (J. T. Scott & Holme, 2016). One major effort is to introduce a new school model such as charter schools to the existing traditional public school system. In light of the general belief that offering the opportunity to choose the best service incentivizes public service vendors to compete and improve (Chubb & Moe, 1990; Walberg & Bast, 2003), political support from federal, state and local governments and financial aid from philanthropic organizations have substantially contributed to the expansion of charter schools across the US.

Yet in the educational market, inherently operated under no drastic change of demand and supply, opening a new charter school can function as a non-negligible trigger for closures of currently operating schools. In other words, for market equilibrium where supply and demand are in balance, the rising number of charter schools within stable educational markets poses an explicit or implicit threat to local public schools. Furthermore, nearby charter schools do not promise seats for students from closed schools when taking into account their open enrollment schemes. The rise of charter schools accompanies the unintended possibility of school closures, and non-choosers—i.e. students who are either unwilling to or unable to attend charter schools—are put in jeopardy of losing access to neighboring schools (Lipman, 2011).

Much research has focused on the impact of school closures on financial efficiency and academic achievement (e.g. Brummet, 2014; Dowdall, 2011; Duncombe & Yinger, 2007;

Engberg, Gill, Zamarro, & Zimmer, 2012; Lytton, 2011; Streifel, Foldesy, & Holman, 1991)), and a number of studies have demonstrated changes led by charter schools (e.g. Frankenberg et al., 2011; Garcia, 2008a; C. A. Lubienski, 2004; Morley, 2006)). Still, we have very little knowledge to build bridges between two different educational agendas, albeit highly connected to each other. Thus, this paper scrutinizes how the growth of charter schools leads to school closures, and examines what changes have occurred in students by focusing on the potential for inequitable access after these neighborhood school closures.

Reshaping Education Markets

Though school districts increasingly shut down underperforming public schools on the basis of test scores and graduation rates (A. W. Johnson, 2012; Stuit, 2012), the traditional approach to school closure has been to improve efficiency in school management by reducing financial losses as well as to strengthen centralized control (Bard, Gardener, & Wieland, 2006; Post & Stambach, 1999). Empty seats and underutilized school buildings in given regions become focal points in debates over budget crises with demographic pressures that could justify closing and consolidating. Therefore, a low school utilization rate, which is estimated as the ratio of enrollment in a school to a school's capacity, has decisive influence on classifying schools under poor school management (Bard et al., 2006; Finnigan & Lavner, 2012; Lytton, 2011). Parents and teacher organizations voice strong opposition against the closings, specifically on the closure process and criteria that district administrators establish and utilize (Deeds & Pattillo, 2015; Ewing, 2015). In spite of continuing debates over harms and benefits of school closings, economies of scale now lend some support to school closure policies in larger cities experiencing out-migration and depopulation. This classic approach for efficiency maximization indeed gave

strong grounds for determining which schools would close in urban school districts, where the number of students at traditional public school decreased by 17% in Chicago, 23% in Philadelphia, and 54% in Detroit over a span of one decade (Dowdall, 2011).

Apart from the latest shift in the demand side, the rise of charter schools, incentivized through parental choice empowered by market mechanisms, has recently posed a challenge to traditional school markets (Garnett, 2014; Lipman, 2011; J. T. Scott & Holme, 2016). Contrary to the past where local education governments assigned children to neighboring schools according to the distance from their home, many states allow students to opt out of neighboring local schools and attend distant charter schools. The use of market metaphors in public education contributes to reshaping the local education markets by putting community schools at risk of losing students to charter school competitors. In addition, the theoretical potentials of charter schools, such as establishing differentiated schools and initiating experimental programs, draw great involvement from philanthropic organizations harnessing a huge amount of financial investment in charter school experiments (Lipman, 2011; Quinn, Tompkins-Stange, & Meyerson, 2014; Saltman, 2011; J. T. Scott, Lubienski, & DeBray, 2009). Such wide public support promotes the expansion of charter school programs in a number of large urban school districts that suffer from a lack of excellent, innovative schools. However at the same time, the proliferation of charter schools is leading to an oversupply of education providers in school districts, whose operations may then become insecure due to student mobility. The increasing imbalance between supply and demand in local school markets can be a catalyst for the underutilization of traditional public schools (Corcoran & Stoddard, 2011; Giersch, 2014; Holyoke, Henig, Brown, & Lacireno-Paquet, 2009; Kúscová & Buckley, 2004; C. A. Lubienski & Weitzel, 2010; Stoddard & Corcoran, 2007; Witte, Shober, & Manna, 2003).

It is not surprising that the loss of students to charter schools accelerates school closures in particular areas with the decline in prospective students, especially referring back to previous school closures (Bjork & Blase, 2009; Garnett, 2014; Morrill & Symons, 1977; Nicholls, 2001; Nitta, Holley, & Wrobel, 2010; Talen & Anselin, 1998; Truelove, 1993). Yet, this process whereby large-scale school closings and charter school expansions rebuild education markets requires a deliberate attention to spatial equality. Traditionally, school closures have been criticized for depriving students who remain in certain areas of the opportunity to conveniently attend neighboring schools (S. Williams & Wang, 2014). Especially considering an urban setting clustered according to particular demographic and socioeconomic characteristics, thereby addressing geographic disparities in access to and utilization of public services (W. J. Wilson, 1987; 2012), a district-wide school closure policy raises additional questions about where closing schools position and who is harmed. Even though several policy makers open charter schools for students in the districts of closed schools, local education agencies do not have the right to demand that students within their attendance boundary attend a certain charter school. Moreover, the presence of charter school as a legitimate option does not guarantee that students at schools to be closed will enjoy automatic enrollment to a charter school within commutable distance. Under these circumstances, closing public schools and expanding charter schools in a large city calls for empirical evaluation on whether students in given areas lose an equal opportunity to access adjacent schools.

Spatial Equality in Unequal Markets

In the traditional sorting mechanism devised by Tiebout, the large involvement of local governments in public services including education, hospitals and police protection leads to the diverseness of public services. Since local residents efficiently sort themselves across locations

in accordance with their interests and needs, heterogeneity in local public goods among areas affects the decision making process of residential choice (Nechyba, 2003; 2010; Tiebout, 1956). However, this notion does not sufficiently account for current contexts. Information about the quality and quantity of services, essential for residence decision, is inequitably distributed (Krysan & Bader, 2009; National Fair Housing Alliance, 2006). Individuals who are socially connected with similar socioeconomic and ethnic attributes tend to share a particular geographic area exclusively, which in turn would divide geographically continuous communities (Bader & Krysan, 2015; W. A. V. Clark, 1992; Emerson, Chai, & Yancey, 2001; Highsmith & Erickson, 2015; Jargowsky, 2014; Krysan, Couper, Farley, & Forman, 2009). Political decisions, including mortgage delivery systems, restrictions on density, building regulations and public taxation policies, create structural barriers to entry into a new community, and perpetuate hierarchical differentiation within and between communities (Alba & Logan, 1993; Apgar & Calder, 2005; Bickford & Massey, 1991; Bifulco, Ladd, & Ross, 2009; Charles, 2003; Foley, 1973; Galster, 1988; Iceland, 2004; Iceland & Wilkes, 2006; South, Crowder, & Pais, 2011; Yinger, 1997). In particular, certain race and ethnicity populations have been displaced as a result of gentrification, basically aiming at seeking reinvestment and revitalization in marginalized neighborhoods in the 1980s (Heidkamp & Lucas, 2006; Hwang, 2015; Timberlake & Johns-Wolfe, 2017). Therefore, regardless of any meaningful changes in racial attitudes toward integration, structural inequalities have leveraged and perpetuated deep-rooted residential segregation by race and ethnicity between localities in broader metropolitan regions (J. H. Lewis & Hamilton, 2011; Thompson, 2017; E. K. Wilson, 2014).

Evidence on spatially fragmented residential patterns, attributed to either individual choices or institutional contexts, can be easily found in the historical debate over racial

segregation. A considerable number of studies have pointed out uneven racial distributions between Whites and Blacks intensified by urban decay and suburban sprawl in metropolitan areas (Denton & Massey, 1988; Farley, Allen, National Committee for Research on the 1980 Census, 1989; Massey & Denton, 1989; 1993; Massey & Fischer, 1999; Pattillo-McCoy, 1999; K. E. Taeuber & Taeuber, 1965). Apart from the dichotomous perspective, such as urban versus suburban and White versus Black dualisms, extensive work has recently unveils trends of residential patterns in complicated manners (Charles, 2001; W. A. V. Clark et al., 2015b; W. A. V. Clark & Ware, 1997; Frey, 2011; Logan et al., 2004; Massey & Denton, 1993; Morrill, 1995; Orfield & Frankenberg, 2014; Sandoval, 2011; Yinger, 1997). These findings consistently present that a dynamic combination of income, poverty, education, employment and occupation is coupled with uneven spatial variations across US metropolitan areas. Therefore, although the advancement in social and economic status of minorities is lowering racial barriers to living in the suburbs dominated by Whites, differences in demographic and socioeconomic characteristics have still served as a prominent descriptor for ongoing residential patterns (X. de S. Briggs, 2005; Charles, 2003; Galster, 1988; Jargowsky, 1996; Massey & Denton, 1993; Owens, 2015; South & Crowder, 1997; Tegeler, 2005; W. J. Wilson, 1987).

The real concern is that these spatial segmentations lead to disparities in quality of local services and result in neighborhood effects reflecting the place-based social capital (C. A. Bell, 2009a; Brisson & Usher, 2005; 2007; Coulton & Pandey, 1992; Lichter, Parisi, & Taquino, 2012; Orfield, 2013; Putnam, 2000; Rivkin & Welch, 2006; Rosenbaum, DeLuca, & Tuck, 2005). As suggested in Kain's spatial mismatch hypothesis (1968; 1992; 2004), disadvantaged populations in inner cities have suffered fewer opportunities of employment and limited access to public services (Bayer & McMillan, 2005; Charles, Dinwiddie, & Massey, 2004; Darden &

Kamel, 2000a; Dufur, Parcel, & Troutman, 2013; Jin & Paulsen, in press; Logan & Oakley, 2012; Neuman & Celano, 2001; Turley, 2009). In particular, the historic ghettoization and current gentrification processes of widening disparities within and between neighborhoods have yielded increases in vacancy rate and decreases in population in selected sections of large cities (Cutler & Glaeser, 1997; Cutler, Glaeser, & Vigdor, 1999; South & Crowder, 1997). Followed by such population declines, schools in urban "ghettos," created by the geographic isolation of marginalized populations, generally show a lower school utilization rate. Given that the falling size of enrollment has justified the elimination and merging of schools, school closures in at-risk regions become another loss of community-based services beyond the inconvenience of enrolling children in schools far away (Kearns, Lewis, McCreanor, & Witten, 2009; Peshkin, 1982; R. Scott & Saucedo, 2013; Sell & Leistritz, 1997; Witten, McCreanor, Kearns, & Ramasubramanian, 2001). With this in mind, a school closing policy, which is less concerned about underlying spatial contexts, can imply localized exclusion from access to neighboring schools (Dikec, 2001).

In urban education markets with steadily decreasing demand, charter school openings may hasten the closure of underutilized public schools, especially in impoverished neighborhoods that have been undergoing rapid depopulation and little residential mobility (Allweiss, Grant, & Manning, 2015; Lipman, 2011). This suggests that the expansion of charter schools unexpectedly places students who already reside in less advantaged neighborhoods under a double trap by lowering the ease of access to traditional public schools (Boyne & Powell, 1991; Elacqua, Martínez, Santos, & Urbina, 2012; Lipman, 2013; M. Powell & Boyne, 2001; The Schott Foundation for Public Education, 2013). In light of the general definition of equality as a condition where everyone is similarly treated irrespective of socioeconomic status and

demographic characteristics, such selective abandonment contributes to perpetuating and exacerbating geographic inequality, by subdividing areas into ones either more or less accessible to nearby schools (Brayboy, Castagno, & Maughan, 2007; Hay, 1995; Lipman, 2013; Soja, 2011). In order to address this rising concern, community activists filed complaints under Title VI of the Civil Rights Act in 2014, alleging that current mass school closures in the three large urban districts in Illinois, Louisiana and New Jersey deny equal opportunities for African-American students (Garnett, 2014; Layton, 2014; Urist, 2015). Research on children left behind after school closings, specifically as a result of new charter school establishment, can be useful for constructing a spatial understanding of equal education opportunity associated with area deprivation.

Data and Methods

The current policy initiatives introduce the possibility that the oversupply created by charter schools' growth pushes traditional school markets, experiencing a shortage in demand, to shut down their local schools. Grounded upon this assumption, the purpose of this study is to identify the change in access to neighborhood schools after the school closure, through exploring the chronicle of charter school expansion in one large urban school district. Specifically, this study tests two hypotheses informed by the extant literature: (1) school closures bring about changes to a student's access to schools, and (2) the changes of access are related to community characteristics. To this end, the study focuses on the recent Chicago Board of Education decision. The Chicago Public Schools [CPS] announced in March of 2013 that 54 primary schools would close in the following school year due to a budget deficit, and then developed in August 2013 a proposal to create new charter schools.

School Closures in the Chicago Public Schools

The third largest school district in the US, CPS is located in a highly segregated metropolitan area in the state of Illinois. According to the average segregation ranks released by the Census Bureau (Iceland, Weinberg, & Steinmetz, 2002), the Chicago metropolitan area ranked ninth in Black segregation and fifth in Hispanic segregation among 43 large metropolitan areas. Apart from the historic housing segregation where African Americans have been substantially concentrated in the southern and western city sides, the city of Chicago is spatially separated around the central business district, known as "the Loop," around the northwest sections by the Chicago River (M. B. Anderson & Sternberg, 2013; Demissie, 2006; Ewing, 2015; Posey-Maddox, 2016). As the Loop has grown with the increases in housing prices and number of residents since various housing policies in the 1990s, Chicago has extensively invested in schools and libraries in the area. On the other hand, marginalized neighborhoods populated by lower-income and minority residents have been isolated from the wealthier areas (Lipman, 2002; 2003; Podmolik, 1998; D. Wilson & Sternberg, 2012). Especially with the current economic recession contributing to the decline in median household income and the increase of the foreclosure and vacancy rates, discouraged investment in these communities leads many local residents to leave their home communities (Chicago Area Fair Housing Alliance, 2013; Lawyers' Committee for Better Housing, 2013; National Fair Housing Alliance, 2006; Pendall, 2012).

Chicago has undergone the dramatic decline of school-aged children similar to other major cities. Total population in the city of Chicago decreased by 6.3%, whereas primary school-aged children notably declined by 23.7%, specifically in the south and west areas predominated by the African-American population, in the last decade. In response to rising empty classrooms

and under-enrolled schools, CPS has identified schools to be closed on the basis of two reasons: Academic underperformance and space underutilization (Chicago Public Schools, 2012a; 2013b; la Torre & Gwynne, 2009). In accordance with the CPS Performance, Remediation and Probation Policy, CPS, criticized for the chronic underperformance of public schools, may close a school which fails to make adequate progress after being placed on probation as determined by performance on standardized tests, attendance and dropout rates. Additionally, CPS can close a school if student enrollment is less than 80 percent of ideal enrollment, which is estimated under the assumption that each homeroom, equaling 76 percent of total classrooms within its main facility, holds 30 students (Chicago Public Schools, 2011; Commission on School Utilization, 2013). In an attempt to improve efficiency and effectiveness, CPS indeed closed 13 primary schools for underutilization and nine for poor academic performance between 2001 and 2006 (la Torre & Gwynne, 2009).

Despite these efforts, empty seats in about 20% of the district capacity contributed to deepening substantial financial challenges in CPS. In the fall of 2013, the district closed 46 of the 478 schools serving kindergarten through 8th grade, excluding charter schools and schools for students with disabilities. CPS expected to save $560 million for 10 years through this relatively large-scale school closing policy (Chicago Public Schools, 2013d). The resources saved from closing and relocating about 8% of schools, approximately $233 million, would be redirected to investing in air conditioning systems and libraries at receiving schools, providing technical support such as iPads for students, and expanding security for the routes from school to home (Chicago Public Schools, 2013d; 2013e). Although CPS maintained that the average change in distance after school closings would be fewer than two blocks from home (Chicago Public Schools, 2013a), CPS parents and students were concerned about the increasing likelihood of

exposure to crime such as violence and drugs (Ahern, 2013; Davey, 2013; Ortiz, 2015). Aware of the parents' fear of travelling farther to new schools and passing through dangerous neighborhoods, CPS announced the Safe Passage Plan to offer safe routes to students in cooperation with the Chicago Police Department. As about 50 percent of district-run public school buildings in 2015 were still operating with fewer enrollments than available seats (Perez & Richards, 2015), CPS is planning to continue to close underutilized schools and is proposing public hearings with regard to school consolidation and re-location.

Even while budget deficits have compelled underutilized schools to be closed, CPS has launched several new school movements in order to restructure public school markets with steadily decreasing demand through charter school theory and practice. The Renaissance 2010 program, introduced in 2004, closed around 70 underperforming public schools, and then created or converted 100 schools into a performance, charter or contract school. In the 2010-2011 school year, 82 charter school campuses and nine contract schools were opened in the city of Chicago (Chicago Public Schools, 2012b). Following Renaissance 2010, CPS initiated a new fund in 2011, the New Schools for Chicago, sponsored by several philanthropic organizations including the Bill and Melinda Gates Foundation and the CME Group Foundation. This significant funding, designated for experimenting with new instructional and managerial strategies, was invested with the purpose of creating new schools, such as contract or charter schools, to serve about 30 percent of the total CPS student body by 2020. The money allows CPS to address requests for proposals for charter schools in summer, right after closing about 50 public schools in spring, and encourages for-profit and nonprofit organizations to contract with CPS (Chicago Public Schools, 2013c). This partly represents that privatization works as a political decision, rather than aligning economic values (Savas, 2005; Van Slyke, 2003). In this sense, though the public

opposition against charter school expansions and neighborhood school closures temporarily stalled additional charter school openings before the mayoral election of Chicago, the growth of charter schools in CPS has become instrumental in reshaping current educational markets, as well as replacing the soon-to-be-closed schools with new options.

Geo-socio-economic Comparison with Access

Using the list of closing schools approved by the Chicago Board of Education in 2013, the school data, including all public school locations and enrollments, is extracted from the school directory provided by CPS. To describe the relation between equal education opportunities and school closures in an urban area, this study measures changes of access to neighboring schools in the same manner presented in the second paper. By employing the two-step floating catchment area model developed by Radke and Mu (2000), this study estimates accessibility as the ratio of schools to student density within an area centered at a school location (Luo & Qi, 2009; Luo & Wang, 2003; McGrail & Humphreys, 2009; Radke & Mu, 2000; Wan et al., 2012; F. Wang & Luo, 2005; S. Williams & Wang, 2014). Accessibility impedance of commute time for this study is designated as 10 minutes for students aged 5 to 13 years. The value of accessibility change at a single census tract is calculated as the difference between the value of accessibility before and after school closings. Accessibility changes across the CPS are discriminated by quintile with a geometric interval scheme, instead of the traditional methods by the natural breaks or standard deviation classification. The geometric interval scheme provides more reasonable breaks for continuous but highly skewed data with a number of duplicated values.

The changes in estimated accessibilities before and after the school closing policy in 2013 are combined with socio-geographical attributes through a cartogram technique. In

comparison with a choropleth map that has conventionally been used, a cartogram is a thematic, value-added map that represents area or distance by distorting space with a certain variable (Dorling, 1996; Gastner & Newman, 2004; Hennig, 2013; Henriques, Bação, & Lobo, 2009; Tobler, 2004). Particularly for its primary advantage of demonstrating variations over space and place, as well-known through the Worldmapper Project,[2] the cartogram technique is often used to depict equitable and even—or inequitable and uneven—distributions in the incidence of disease, mortality rate or the proportion of wealth (Dorling, 1996). Therefore, the application of a density-unequalized map can delineate the relation between geographic distributions of socioeconomic features and changes in accessibility, as well as discern how changes in accessibility are over- or under-represented across areas. Cartograms in this study are generated through the ArcSript Cartogram Geoprocessing Tool developed by Tom Gross,[3] based especially on the diffusion algorithm by Gastner and Newman (2004).

On the grounds of prior research on segregation and stratification in urban areas, this study pays particular attention to the density of the African American population aged 5 through 13 years without Hispanic or Latino origin and the population aged 5 through 13 years of Hispanic or Latino origin. This study selects a proportion of families with children under 18 years old below the poverty level. The poverty level designed by the US Census Bureau is estimated as the ratio of a family's total income to the family's threshold. In 2010, the Office of Management and Budget's Statistical Policy Directive 14 set the threshold as $22,113 for a family of four and $26,023 for a family of five. These selected features are derived from the American Community Survey 2011 five-year estimate. Finally, this study focuses on crime indicators at the community level. Extant research consistently indicates that exposure to a local

[2] See more examples at http://www.worldmapper.org
[3] See for detail at http://arcscripts.esri.com/details.asp?dbid=15638

homicide reduces African-Americans' academic performance on vocabulary and reading skills (Sharkey, 2010; Sharkey & Elwert, 2011). Students in neighborhoods with high crime rates are more likely to underperform on achievement tests, drop out of high schools, and be under-enrolled in university (Balfanz, Byrnes, & Fox, 2014; Billings, Deming, & Ross, 2016; Burdick-Will, 2013; Fabelo et al., 2011; Gregory, Skiba, & Noguera, 2010; Kirk & Sampson, 2012). Because parents in CPS, like many families in inner cities, have also put an emphasis on safety in accessing schools since the school closing was announced in 2013 (Banerjee, Uhm, & Bahl, 2014; Robers, Zhang, Morgan, & Musu-Gillette, 2015), this study includes two indicators extracted from Chicago Police Department reports during the period of June 2012 through May 2013: The indexed crime frequency and the community concerns.[4] The indexed crime frequency includes homicide, criminal sexual assault, robbery, aggravated assault, aggravated battery, burglary, larceny, motor vehicle theft, and arson. The community concerns include gangs, narcotics, prostitution, and conditions such as vacant buildings, poor lighting, overgrown foliage, street flooding, graffiti, abandoned vehicles, troubled buildings, disturbances, vandalism, and traffic violations. Each census tract is re-sized according to these demographic and socioeconomic characteristics within communities.

Findings

In general, vacancy rates tend to be highly correlated with the changes of population and household size in urban areas (Glaeser, Gyourko, & Saks, 2005). CPS has closed schools on the basis of a low school utilization rate derived from the number of children in neighboring communities. Thus, the school closures in 2013 are mostly concentrated in two areas with high vacancy rates, as illustrated in Figure 3-1. This strong connection between closed school

[4] See for detail at http://gis.chicagopolice.org/CLEARMap_crime_sums/startPage.htm#

locations and areas with a high vacancy rate seems to respond well to the efficiency concern of school closing policies. Yet, given that the creation of slums and ghettos in urban cores often begins with rapid vacancies, the rising question is whether or not such clustering of closed schools impedes the achievement of moral geography underlying the concept of distributive justice (Deutsch, 1975; Dikec, 2001; Folger, Sheppard, & Buttram, 1995; Robertson & Dale, 2013; E. E. Sampson, 1975; E. Walster & Walster, 1975).

Figure 3-2 represents the respective distributions of accessibility to CPS schools before and after the CPS school closing policy. Overall, students in the city core are likely to have more available seats within a 10-minute commute than are students farther from the city center. However, the areas with high accessibility in the fall semester considerably decrease after the closing policy, particularly compared to the spring distribution. While the city core still has a high accessibility to the neighboring schools in both spring and fall, the advantage of living in the city core tends to diminish with the school closing policy.

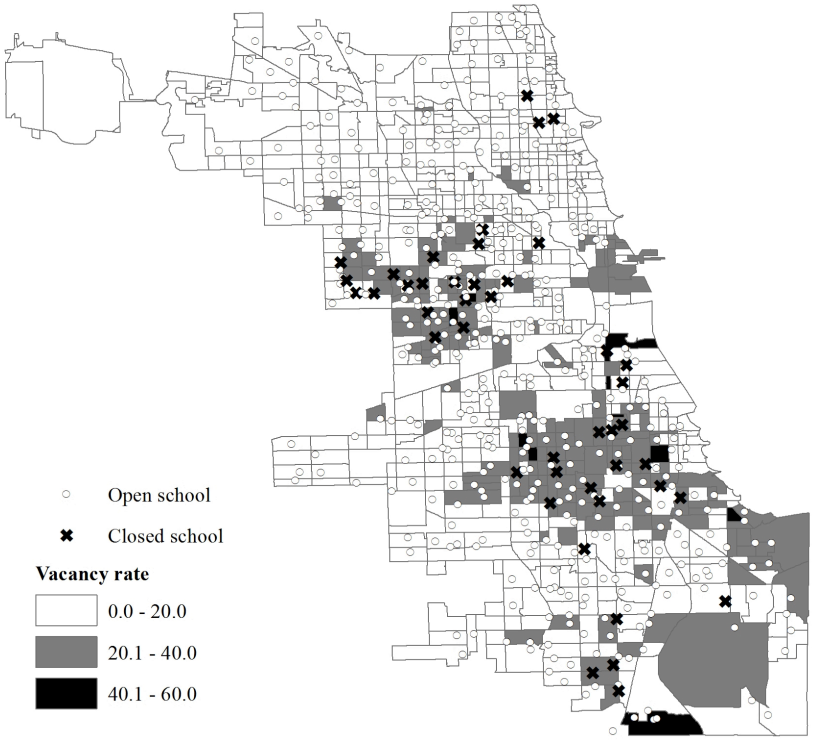

Figure 3-1. Locations of Chicago Public Schools to be closed in spring 2013

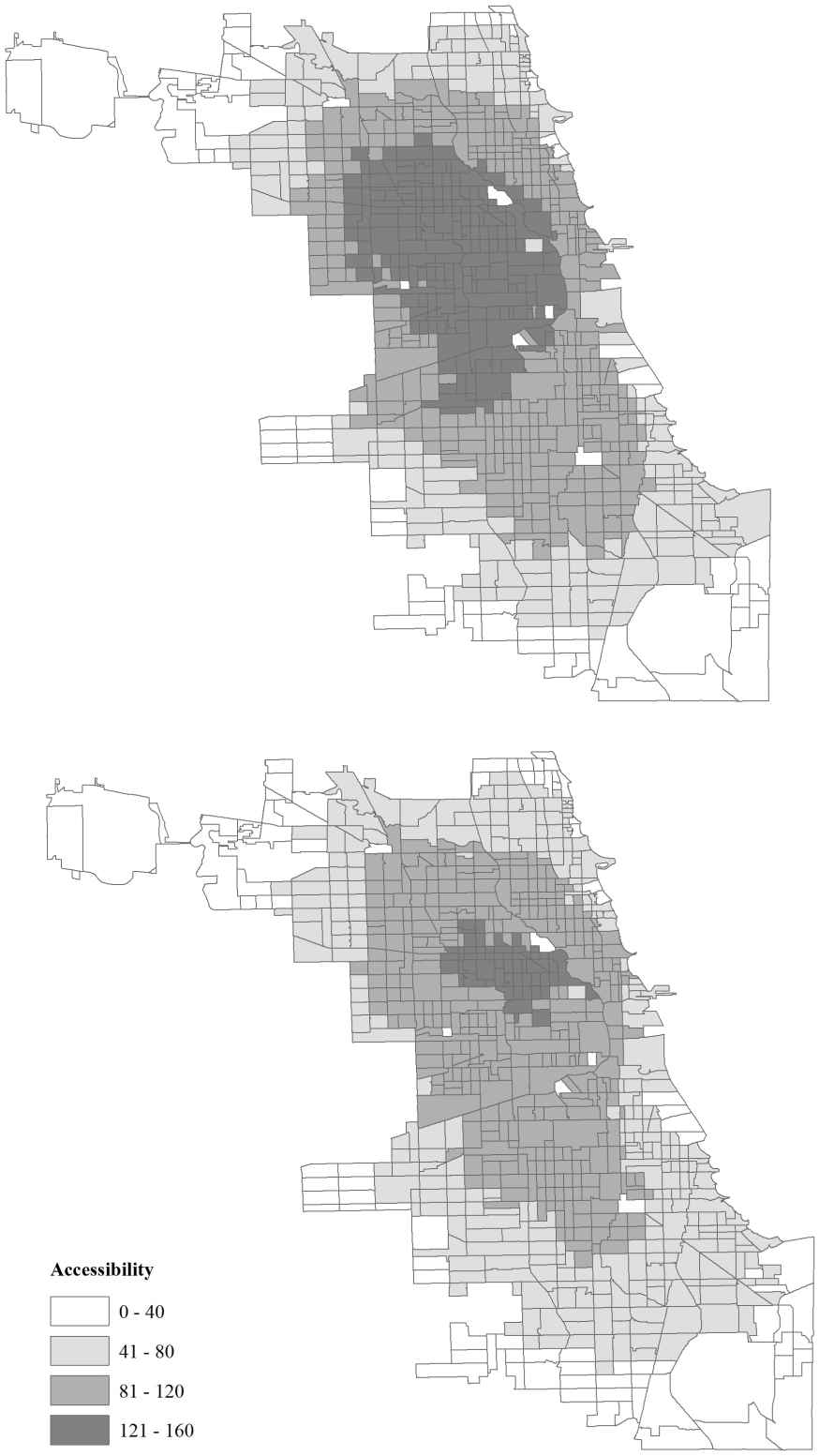

Figure 3-2. The spatial distribution of accessibility to the CPS schools before (top) and after (bottom) closing

Proceeding from the spatial patterns of accessibility before and after the CPS school closing policy in Figure 3-2, Figure 3-3 shows the distribution of accessibility changes by a single census tract. Though most of the census tracts, but only some areas in the city fringes, experience the declines of accessibility with the implementation of the closing policy, the notable shifts in accessibility after the CPS school closures are largely found in the west of downtown Chicago. As the school closings in 2013 bring accessibility changes mostly to the west and southwest areas and not to the entire Chicago area, the areas with a large change of accessibility overlap areas with high accessibility before the school closings. In other words, children in these regions are exposed to a sudden change due to closing neighboring schools. This suggests that school closings in the CPS have great potential to offer discriminatory opportunities of education to children in certain areas in terms of spatial equality.

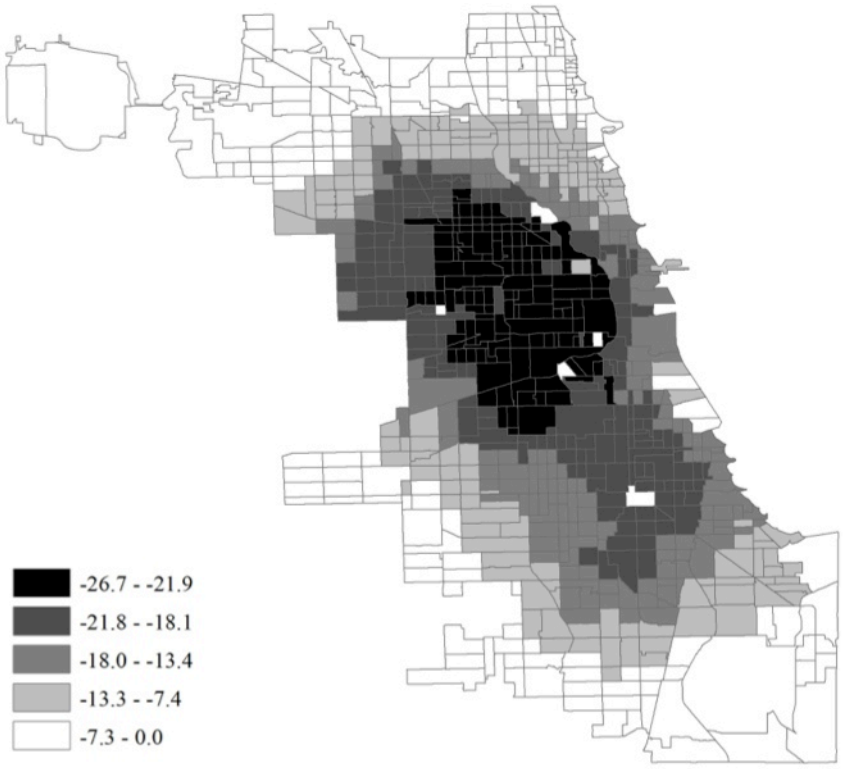

Figure 3-3. The spatial distribution of accessibility change of the CPS schools

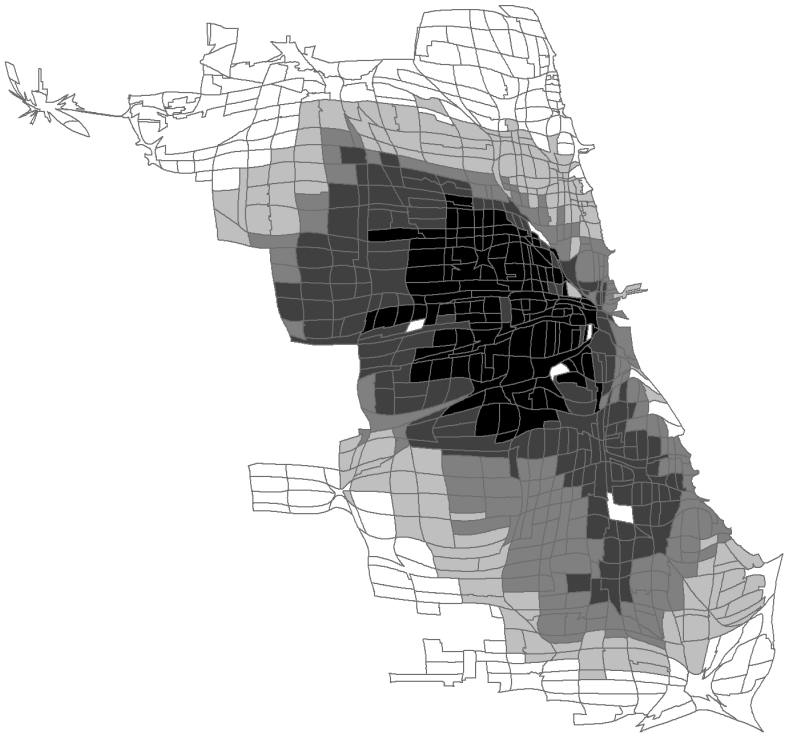

Figure 3-4. The cartograms of accessibility change by total school-aged children

The cartogram in Figure 3-4 reflects the density of total children who are mainly affected by the closings in a census tract, and each census tract is shaded according to its accessibility change. Overall, the density map of school-aged children in CPS does not present the dramatic distortion in comparison with the conventional maps including the previous figures. The demand on primary schools is relatively evenly spread across CPS, excluding only the business core with fewer residents but more commuters in the city of Chicago. The central city core embedding the Chicago Loop areas and most city fringes slightly shrink, since the city core with a large change of accessibility to CPS schools shrinks for the low density of school-aged children, and a number of children live outside of the city core. Whereas, the areas surrounding the city core, especially in western Chicago, are relatively inflated with a high density of school-aged children. In light of this finding that closing underutilized schools, as identified by the number of empty seats, brings about considerable changes in accessibility in areas with fewer children, the CPS school closures seem to do no harm to equal education opportunities. In other words, the cartogram in Figure 3-4 suggests that most CPS students witness a mild decline in accessibility.

However, the situations depicted in Figure 3-5 differ remarkably from Figure 3-4. In Figure 3-4, it can be seen that most children experience relatively mild decreases in accessibility across Chicago after the closings, since the areas with a high accessibility change become smaller than their actual sizes. In contrast, the geographic disproportion of African-American and Hispanic school-aged children in Chicago inflates certain areas and shrinks others, so that the maps in Figure 3-5 are highly distorted. The enlarged areas present substantial accessibility changes for neighborhoods where schools close, as gradated in darker colors. When taking into account the number of minority children, not the size of total school-aged populations, the school closing policy is likely to yield a negative change of access in the areas with a high density of

both African American and Latino American children aged 5 to 13. This indicates that the school closures, which have been perceived as one of race-blind policies, bring about unintended changes in access for students with certain demographic backgrounds. Indeed, this is similar to early school closing cases in which at-risk Black and Hispanic students saw their schools close in racially segregated urban school districts under court-ordered desegregation plans (Berger, 1983; Dean, 1983; H. J. Scott, 1983; Shavers, 2005; Talen, 2001; Valencia, 2013). The Chicago school closures derived from a utilization crisis unveil the greater likelihood that the school closing process in large urban cities becomes racialized.

Looking in depth at the patterns of race and ethnicity, areas where African American children reside show a small but substantial difference of accessibility after school closings. African American children who are significantly clustered in the southern areas experience a mild change in the level of access, whereas African American students in western Chicago experience a relatively large increase in travel time and distance after the CPS school closings. This pattern implies that even individual students in the same race group can be exposed to different levels of accessibility change depending on their residential choice. On the other hand, the rescaled distribution in the density of Hispanic children illustrates that the vast majority of Hispanic students experience substantial decreases in ease of access to schools. Specifically, the concentration of Hispanic school-aged children in the western and southwestern Chicago area disproportionately enlarges the city core with great differences in accessibility to neighborhood public schools after the CPS school closures and charter school openings. These findings suggest that population subgroups would be differently treated by neutral school closures grounded on the ratio of enrollment to capacity.

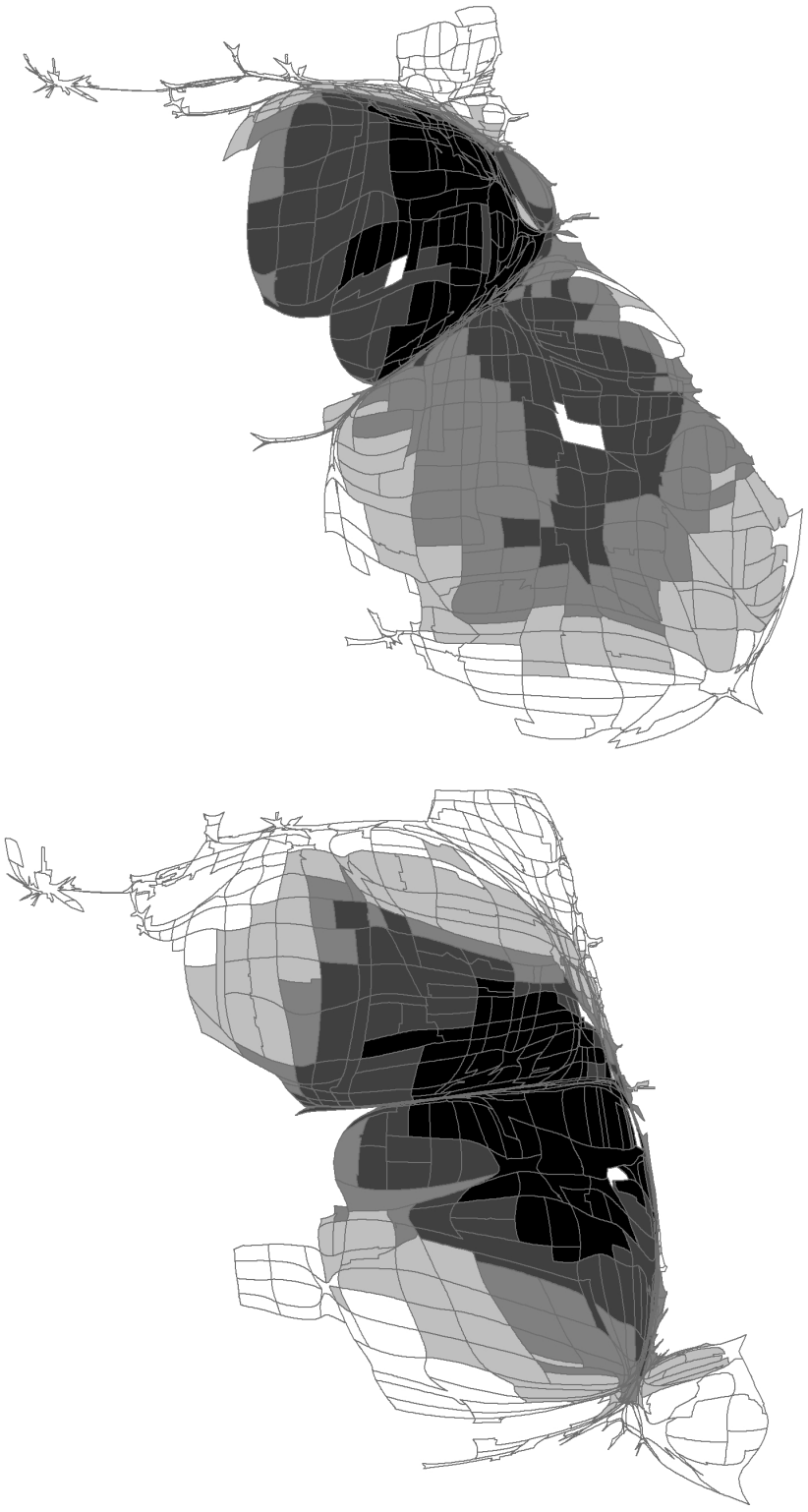

Figure 3-5. The cartograms of accessibility change by African American (top) and Hispanic (bottom) children

Compared with density-unequalized maps, such as Figure 3-3, which understate the city core and overstate the city fringes in CPS, Figure 3-6 illustrates that the distribution of population from lower income families becomes more disproportionate relative to the original sizes. In Figure 3-6, the cartogram by proportion of families with children under 18 years old below the poverty level is notably distorted in all Chicago areas except the city periphery. These areas inflated by a higher proportion of families below the poverty level undergo large changes in access. This spatial distribution, taking into account disadvantaged families, provides a foundation of evidence to strengthen the previous patterns in Figure 3-5, in which current school closures accelerated by charter school openings bring considerable changes in access to community schools within a 10 minute travel impedance to minority students. In light of the significance of social class in determining quantity and quality of access to public services (Dai, 2010; Dai & Wang, 2011; Mladenka, 1989; Talen, 1997), the decrease in accessibility to public schools in disadvantaged areas supports the claim that education policies designed to improve efficiency in school management could undermine equality of educational opportunities. In other words, the CPS school closings are likely to offer unequal opportunities of access to schools within a commutable time to children from less advantaged communities.

Figure 3-6. The cartograms of accessibility change by proportion of families with children under 18 years old below the poverty level

Despite the lack of credibility of crime data, the next two cartograms in Figure 3-7 show that the west sides close to city center are commonly distorted by a high frequency of both indexed crime and community concerns. As the areas enlarged by both crime records become gradated in darker colors, children residing in dangerous and unhealthy communities are placed under threat of a significant change in access after school closings. The inflation by the incidence of community concerns, including gangs, vacant buildings and graffiti, is more prominently consistent with the areas with a high accessibility change, than the inflation by the indexed crime frequency, including homicide and robbery. Also, children in those enlarged areas are more likely to travel to farther schools with a high exposure to crime. This highlights the potential for school closure policies, driven by the decline in school enrollments in school markets and the increase of charter schools, to push children in communities with high incidence of crime to travel through the nearby crime-prone communities.

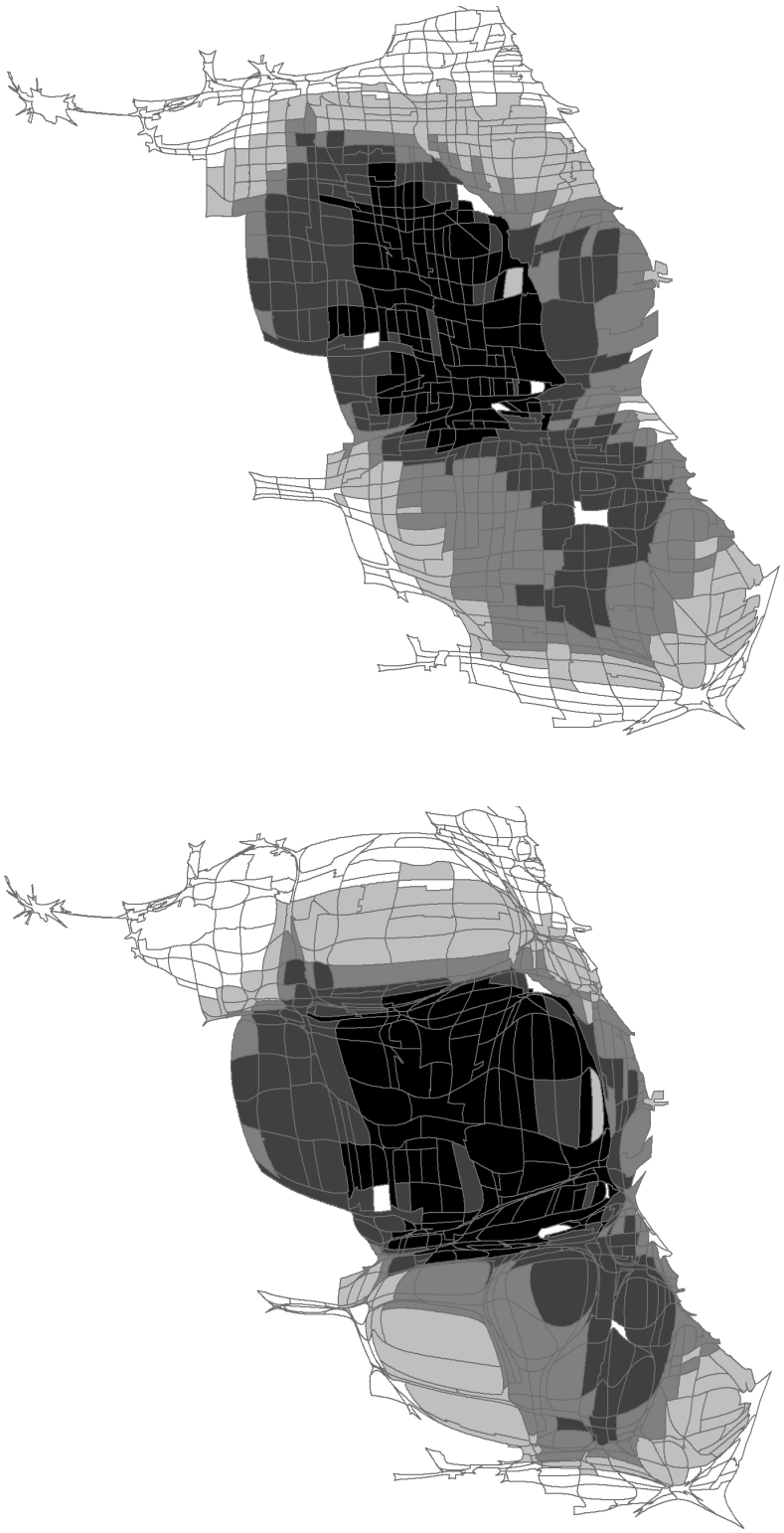

Figure 3-7. The cartograms of accessibility change by indexed crime incidence (top) and community concern crime incidence (bottom)

Discussion

Unlike the past, in which school markets optimized according to the number of community students, diversification in and competition among educational service vendors under market mechanisms increasingly play a critical role in tailoring or customizing schooling experiences (J. T. Scott & Holme, 2016). Thus, the growing number of charter schools re-shapes educational markets well balanced with demand and supply, by opening the marketplace to new entrants. This study pays special attention to educational opportunities for children who are left out after the recent school closures, along with the expansion of charter schools, in a large urban school district with declining enrollment. The study specifically investigates the relation between the change of school accessibility and community characteristics using a cartogram method in GIS. This study illustrates that local school closures, created by under-enrollment and the corresponding financial burdens in school districts, have a negative impact on accessibility of about 13,000 students to be relocated to other neighboring schools. Specifically, African-American and Hispanic school-aged children, as presented in the large geographic distortions redrawn with the population size, are more likely to exposed to the loss of accessibility after the mass school closings. The findings of this study evince the undesirable effect of increased socio-geographic disparities in access to education, in a similar manner that some public schools with high proportions of underserved children offered fewer opportunities for rigorous academics such as STEM and college preparatory courses (U.S. Government Accountability Office, 2016). These challenges might function as a form of weak and disadvantaged, especially considering the strong correlation between races and socioeconomic attributes, opportunity to the majority of particular racial and ethnic minority groups in historically underserved regions. Such results for children with certain backgrounds raise critical questions of spatial equity that quantity and

quality of resources and services become geographically fair on the basis of community needs, and particularly the needs of specific groups (Grant, Floch Arcello, Konrad, & Swenson, 2014; Talen, 1997).

Although inequitably distributed socio-geographies obviously lower the level of access following school closures, CPS still places strong emphasis on strengthening charter school markets that could alleviate the detrimental impacts of changes in accessibility. As addressed in several court decisions, closing existing public schools and instead opening charter schools did not violate the equal protection clause of the Constitution (Council of Organizations and Others for Education about Parochiaid, Inc. v. John Engler, Governor of the State of Michigan, 1997; Villanueva v. Carere, 1994; Wall, 1998). Charter schools, which are public entities under state statues, may be a reasonable option for students in districts with closing neighborhood schools. However, it does not necessarily mean that CPS has the right to essentially transfer students to charter schools. In accordance with the Illinois School Code (105 ILCS5/27A-4 (d)), a local education agency shall not transfer students to a charter school within its attendance boundary, since the decision of attending a charter school appropriately relies upon individual behaviors in the school choice market. In addition, even though CPS encourages charter schools to target racially segregated and deeply disadvantaged areas in Chicago (M. B. Anderson & Sternberg, 2013; S. Bell, 2015; Lipman & Haines, 2007; Trujillo, 2016), it is not clear whether nearby charter schools provide automatic access to students seeking other educational options after the closing of their nearest community school. Prior research has consistently stated that charter schools do not require any resident proof for enrollment, but have often been associated with exclusionary enrollment policies (C. A. Lubienski et al., 2009; Rotberg, 2014). As found in New Orleans, closing conventional schools and replacing them with charter schools does not always

offer better chance for diverse or quality schools, regardless of eligibility for charter school enrollment (Parvis, 2015). Several studies similarly explain that the project to create new schools, such as the Renaissance 2010 Plan initiating changes for a certain student body in a given area, fails to reduce spatial exclusion from equal access to education (S. Bell, 2015; Burdick-Will et al., 2013; T. M. Davis & Oakley, 2013; Lipman, 2008; 2009; 2015).

Aside from the concern about less inclusive and more inequitable access to charter schools, processes and responses related to community school closures vary by geography. As the latest research indicates that a decision making process of school closures and rezoning attendance boundaries has increased the gap in racial segregation between attendance zones (Siegel-Hawley, Bridges, & Shields, 2017), some families who reside in affluent areas have attempted to keep their schools open by compensating financial gaps with parent fundraising and volunteerism through collective involvement (Finnigan & Lavner, 2012; Guagliardo, 2004; Horvat, Weininger, & Lareau, 2003; Karp, 2015; A. A. Nelson & Gazley, 2014; Posey-Maddox, 2016; Posey-Maddox, Kimelberg, & Cucchiara, 2014). On the other side, students from less advantaged communities rarely suggest practical approaches to preventing their schools from closures under budgetary issues. These students at closed schools in at-risk communities are more likely to be displaced into schools with academically weak records, as the previous CPS closures between 2001 and 2006 had been (la Torre & Gwynne, 2009; J. Lee, 2016). Furthermore, given that charter schools in CPS position themselves nearby but not directly within highly disadvantaged communities (LaFleur, 2016), school closures hastened by opening charter schools in large urban school districts can cause greater risk of educational inequality in relatively impoverished neighborhoods (Caref, Hainds, Hilgendorf, Jankov, & Russel, 2012; Chicago Area Fair Housing Alliance, 2013; New York Appleseed, 2013; Office of the United

Nations High Commissioner for Human Rights, 2016). Consequently, the findings from the recent CPS school closures bring to light the fact that the conventional closure policy based on the capacity and number of empty seats at schools would heighten segregation and inequality in metropolitan areas when propelled by the rapid expansion of charter schools (Paino, Boylan, & Renzulli, in press). Taken together, this study suggests the possibility that educational policies embracing market mechanisms exacerbate uneven urban geographies constructed by the needs of capitalism (DeFilippis, 2017; Harvey, 1992; J. T. Scott & Holme, 2016).

REFERENCES

Abdulkadiroğlu, A., & Sönmez, T. (2003). School choice: A mechanism design approach. *The American Economic Review*, *93*, 729–747.

Ahern, M. A. (2013, October 25). Chicago pulls back on Safe Passage staffing. *NBC Chicago*. Retrieved from http://www.nbcchicago.com/blogs/ward-room/Chicago-Pulls-Back-on-Safe-Passage-Staffing-229290951.html

Alba, R. D., & Logan, J. R. (1993). Minority proximity to whites in suburbs: An individual-level analysis of segregation. *American Journal of Sociology*, *98*, 1388–1427.

Allweiss, A., Grant, C. A., & Manning, K. (2015). Behind the photos and the tears: Media images, neoliberal discourses, racialized constructions of space and school closings in Chicago. *Race Ethnicity and Education*, *18*, 611–631.

Altenhofen, S., Berends, M., & White, T. G. (2016). School choice decision making among suburban, high-income parents. *AERA Open*, *2*(1), 1–14.

American Federation of Teachers. (2004). *Charter school achievement on the 2003 National Assessment of Educational Progress*. Washington, DC: American Federation of Teachers.

Ancess, J., & Allen, D. (2006). Implementing small theme high schools in New York City: Great intentions and great tensions. *Harvard Educational Review*, *76*, 401–416.

Anderson, M. B., & Sternberg, C. (2013). "Non-White" gentrification in Chicago's Bronzeville and Pilsen: Racial economy and the intraurban contingency of urban redevelopment. *Urban Affairs Review*, *49*, 435–467.

Angrist, J. D., Pathak, P. A., & Walters, C. R. (2013). Explaining charter school effectiveness. *American Economic Journal: Applied Economics*, *5*(4), 1–27.

Anselin, L., Syabri, I., & Kho, Y. (2006). GeoDa: An introduction to spatial data analysis. *Geographical Analysis*, *38*, 5–22.

Apgar, W., & Calder, A. (2005). The dual mortgage market: The persistence of discrimination in mortgage lending. In X. de S. Briggs (Ed.), *The geography of opportunity: Race and housing choice in metropolitan America* (pp. 101–123). Washington, DC: Brookings Institution Press.

Arsen, D., Plank, D., & Sykes, G. (1999). *School choice policies in Michigan: The rules matter*. East Lansing, MI: School Choice and Educational Change, Michigan State University.

Arum, R. (2000). Schools and communities: Ecological and institutional dimensions. *Annual Review of Sociology*, *26*, 395–418.

Ayscue, J. B., Siegel-Hawley, G., Kucsera, J. V., & Woodward, B. (in press). School segregation and resegregation in Charlotte and Raleigh, 1989-2010. *Educational Policy*. doi: 10.1177/0895904815625287

Bader, M. D. M., & Krysan, M. (2015). Community attraction and avoidance in Chicago: What's race got to do with it? *The Annals of the American Academy of Political and Social Science*, *660*, 261–281.

Balfanz, R., Byrnes, V., & Fox, J. (2014). Sent home and put off-track: The antecedents, disproportionalities, and consequences of being suspended in the ninth grade. *Journal of Applied Research on Children: Informing Policy for Children at Risk*, *5*(2).

Baller, R. D., Anselin, L., Messner, S. F., Deane, G., & Hawkins, D. F. (2001). Structural covariates of U.S. county homicide rates: Incorporating spatial effects. *Criminology*, *39*, 561–588.

Banerjee, T., Uhm, J., & Bahl, D. (2014). Walking to school: The experience of children in inner city Los Angeles and implications for policy. *Journal of Planning Education and Research*, *34*(2), 123–140.
Bard, J., Gardener, C., & Wieland, R. (2006). Rural school consolidation report: History, research summary, conclusions, and recommendations. *The Rural Educator*, *27*(2), 40–48.
Bartkus, B., Glassman, M., & McAfee, B. (2006). Mission statement quality and financial performance. *European Management Journal*, *24*(1), 86–94.
Bast, J. L., & Walberg, H. J. (2004). Can parents choose the best schools for their children? *Economics of Education Review*, *23*, 431–440.
Bayer, P., & McMillan, R. (2005). *Racial sorting and neighborhood quality* (No. 11813). Cambridge, MA: National Bureau of Economic Research.
Bell, C. A. (2007). Space and place: Urban parents' geographical preferences for schools. *Urban Review*, *39*, 375–404.
Bell, C. A. (2009a). All choices created equal? The role of choice sets in the selection of schools. *Peabody Journal of Education*, *84*, 191–208.
Bell, C. A. (2009b). Geography in parental choice. *American Journal of Education*, *115*, 493–521.
Bell, S. (2015). Mapping the discourse of neoliberal education reform: Space, power, and access in Chicago's Renaissance 2010. In W. Au & J. J. Ferrare (Eds.), *Mapping corporate education reform: Power and policy networks in the neoliberal state* (pp. 126–146). New York, NY: Routledge.
Berger, M. A. (1983). Neighborhood schools: The new(?) legal response to enrollment decline and desegregation. *Urban Education*, *18*, 7–28.
Bickford, A., & Massey, D. S. (1991). Segregation in the second ghetto: Racial and ethnic segregation in American public housing, 1977. *Social Forces*, *69*, 1011–1036.
Bifulco, R., & Buerger, C. (2012). *The influence of finance and accountability policies on charter school locations* (No. 209). New York, NY: National Center for the Study of Privatization in Education.
Bifulco, R., Ladd, H. F., & Ross, S. L. (2009). Public school choice and integration evidence from Durham, North Carolina. *Social Science Research*, *38*, 71–85.
Billings, S., Deming, D. J., & Ross, S. L. (2016). *Partners in crime: Schools, neighborhoods and the formation of criminal networks* (No. 21962). Cambridge, MA: National Bureau of Economic Research.
Bjork, L. G., & Blase, J. (2009). The micropolitics of school district decentralization. *Educational Assessment, Evaluation and Accountability*, *21*, 195–208.
Black, D. W. (2012). Civil rights, charter schools, and lessons to be learned. *Florida Law Review*, *64*, 1723–1782.
Black, J. A., & Latta, M. (2015). Do mission statements shape faculty research? A case study of a school in transition. *Journal of Higher Education Theory and Practice*, *15*(3), 99–113.
Black, S. E. (1999). Do better schools matter? Parental valuation of elementary education. *The Quarterly Journal of Economics*, *114*, 577–599.
Bodine, E., Fuller, B., González, M. F., Huerta, L. A., Naughton, S., Park, S., & Teh, L. W. (2008). Disparities in charter school resources—the influence of state policy and community. *Journal of Education Policy*, *23*, 1–33.
Boerema, A. J. (2006). An analysis of private school mission statements. *Peabody Journal of Education*, *81*, 180–202.

Bosetti, L. (2004). Determinants of school choice: Understanding how parents choose elementary schools in Alberta. *Journal of Education Policy*, *19*, 387–405.

Boyne, G. A., & Powell, M. (1991). Territorial justice: A review of theory and evidence. *Political Geography Quarterly*, *10*, 263–281.

Brayboy, B. M. J., Castagno, A. E., & Maughan, E. (2007). Equality and justice for all? Examining race in education scholarship. *Review of Research in Education*, *31*, 159–194.

Briffault, R. (1996). The local government boundary problem in metropolitan areas. *Stanford Law Review*, *48*, 1115–1171.

Briggs, X. de S. (2005). More pluribus, less unum? The changing geography of race and opportunity. In X. de S. Briggs (Ed.), *The geography of opportunity: Race and housing choice in metropolitan America* (pp. 17–41). Washington, DC: Brookings Institution Press.

Brisson, D. S., & Usher, C. L. (2005). Bonding social capital in low-income neighborhoods. *Family Relations*, *54*, 644–653.

Brisson, D. S., & Usher, C. L. (2007). The effects of informal neighborhood bonding social capital and neighborhood context on homeownership for families living in poverty. *Journal of Urban Affairs*, *29*, 65–75.

Brummet, Q. (2014). The effect of school closings on student achievement. *Journal of Public Economics*, *119*, 108–124.

Brunner, E. J., Cho, S. W., & Reback, R. (2012). Mobility, housing markets, and schools: Estimating the effects of inter-district choice programs. *Journal of Public Economics*, *96*, 604–614.

Budde, R. (1988). *Education by charter: Restructuring school districts*. Andover, MA: Regional Laboratory for Educational Improvement of the Northeast & Islands.

Bulman, R. C. (2004). School‐choice stories: The role of culture. *Sociological Inquiry*, *74*, 492–519.

Bunar, N., & Ambrose, A. (2016). Schools, choice and reputation: Local school markets and the distribution of symbolic capital in segregated cities. *Research in Comparative and International Education*, *11*, 34–51.

Burdick-Will, J. A. (2013). School violent crime and academic achievement in Chicago. *Sociology of Education*, *86*, 343–361.

Burdick-Will, J. A., Keels, M., & Schuble, T. (2013). Closing and opening schools: The association between neighborhood characteristics and the location of new educational opportunities in a large urban district. *Journal of Urban Affairs*, *35*, 59–80.

Burgess, S., Greaves, E., Vignoles, A., & Wilson, D. (2011). Parental choice of primary school in England: What types of school do different types of family really have available to them? *Policy Studies*, *32*, 531–547.

Burgess, S., Greaves, E., Vignoles, A., & Wilson, D. (2015). What parents want: School preferences and school choice. *The Economic Journal*, *125*, 1262–1289.

Butler, T., & Hamnett, C. (2010). "You take what you are given": The limits to parental choice in education in east London. *Environment and Planning A*, *42*, 2431–2450.

Card, D. E. (1993). *Using geographic variation in college proximity to estimate the return to schooling* (No. 4483). Cambridge, MA: National Bureau of Economic Research.

Caref, C., Hainds, S., Hilgendorf, K., Jankov, P. C., & Russel, K. (2012). *The Black and White of education in Chicago's public schools: Class, charters & chaos: A hard look at privatization schemes masquerading as education policy*. Chicago, IL: Chicago Teachers Union.

Carnoy, M., Jacobsen, R., Mishel, L. R., & Rothstein, R. (2005). The charter school dust-up. New York, NY: Teacher College Press.

Center for Education Reform. (2011). *The state of charter schools: What we know—and what we do not— about performance and accountability*. Washington, DC: Center for Education Reform.

Center for Research on Education Outcomes. (2013). *National charter school study 2013*. Stanford, CA: Center for Research on Education Outcomes.

Center for Research on Education Outcomes. (2015). *Urban charter school study report on 41 regions*. Stanford, CA: Center for Research on Education Outcomes.

Charles, C. Z. (2001). Processes of racial residential segregation. In A. O'Connor, C. Tilly, & L. D. Bobo (Eds.), *Urban inequality: Evidence from four cities* (pp. 217–271). New York, NY: Russell Sage Foundation.

Charles, C. Z. (2003). The dynamics of racial residential segregation. *Annual Review of Sociology*, *29*, 167–207.

Charles, C. Z. (2005). Can we live together? Racial preferences and neighborhood outcomes. In X. de S. Briggs (Ed.), *The geography of opportunity: Race and housing choice in metropolitan America* (pp. 45–81). Washington, DC: Brookings Institution Press.

Charles, C. Z., Dinwiddie, G. Y., & Massey, D. S. (2004). The continuing consequences of segregation: Family stress and college academic performance. *Social Science Quarterly*, *85*, 1353–1373.

Center for Education Reform (2014). *Charter school facts.* Retrieved from http://www.edreform.com/issues/choice-charter-schools/facts/

Chicago Area Fair Housing Alliance. (2013). *Chicago from home to school: Why segregation persists and current reforms may only make things worse*. Chicago, IL: Chicago Area Fair Housing Alliance.

Chicago Public Schools. (2011). *Chicago Public Schools space utilization standards*. Retrieved from http://www.cps.edu/About_CPS/Policies_and_guidelines/Documents/SpaceUtilizationStandards.pdf

Chicago Public Schools. (2012a). *Guidelines for school actions 2012-2013 school year*. Retrieved from http://www.cps.edu/About_CPS/Policies_and_guidelines/Documents/2012_2013SchoolActionsGuidelines.pdf

Chicago Public Schools. (2012b). New schools and programs. Retrieved December 11, 2013, from http://cps.edu/NewSchools/Pages/ONS.aspx/

Chicago Public Schools. (2013a). CPS fact check on consolidating underutilized schools. *Chicago Public Schools*. Retrieved from http://cps.edu/qualityschools/documents/factcheck.pdf

Chicago Public Schools. (2013b). *Guidelines for school actions 2013-2014 school year*. Retrieved from http://www.cps.edu/SiteCollectionDocuments/GUIDELINES_FOR_SCHOOL_ACTIONS_2013-14.pdf

Chicago Public Schools. (2013c). *Request for proposals for new schools*. Chicago Public Schools. Retrieved from http://cps.edu/newschools/documents/rfp_fornewschools.pdf
Chicago Public Schools. (2013d, March 21). Media briefing. *Chicago Public Schools*. Retrieved from http://www.cps.edu/qualityschools/Documents/briefing.pdf
Chicago Public Schools. (2013e, March 21). Significant new investments to provide quality, 21st century education for CPS students transitioning from underutilized schools this fall. Retrieved from http://cps.edu/News/Press_releases/Pages/3_21_2013_PR2.aspx
Chingos, M. M., & West, M. R. (2015). The uneven performance of Arizona's charter schools. *Educational Evaluation and Policy Analysis*, *37*, 120S–134S.
Chiodo, A. J., Hernández-Murillo, R., & Owyang, M. T. (2010). Nonlinear effects of school quality on house prices. *Federal Reserve Bank of St. Louis*, *92*, 185–204.
Chubb, J. E., & Moe, T. M. (1990). Politics, markets, and America's schools. Washington, DC: Brookings Institution.
Clapp, J. M., Nanda, A., & Ross, S. L. (2008). Which school attributes matter? The influence of school district performance and demographic composition on property values. *Journal of Urban Economics*, *63*, 451–466.
Clark, M. A., Gleason, P. M., Tuttle, C. C., & Silverberg, M. K. (2015a). Do charter schools improve student achievement? *Educational Evaluation and Policy Analysis*, *37*, 419–436.
Clark, W. A. V. (1992). Residential preferences and residential choices in a multiethnic context. *Demography*, *29*, 451–466.
Clark, W. A. V., & Ware, J. (1997). Trends in residential integration by socioeconomic status in Southern California. *Urban Affairs Review*, *32*, 825–843.
Clark, W. A. V., Anderson, E., Östh, J., & Malmberg, B. (2015b). A multiscalar analysis of neighborhood composition in Los Angeles, 2000–2010: A location-based approach to segregation and diversity. *Annals of the Association of American Geographers*, *105*, 1260–1284.
Cobb, C. D., & Glass, G. V. (1999). Ethnic segregation in Arizona charter schools. *Education Policy Analysis Archives*, *7*(1). Retrieved from http://epaa.asu.edu/ojs/article/view/536
Coburn, C. E. (2004). Beyond decoupling: Rethinking the relationship between the institutional environment and the classroom. *Sociology of Education*, *77*, 211–244.
Cohodes, S. R. (2016). Teaching to the student: Charter school effectiveness in spite of perverse incentives. *Education Finance and Policy*, *11*(1), 1–42.
Commission on School Utilization. (2013). *Final report*. Chicago, IL: The Chicago Public Schools.
Corcoran, S. P., & Stoddard, C. (2011). Local demand for a school choice policy: Evidence from the Washington charter school referenda. *Education Finance and Policy*, *6*, 323–353.
Coulton, C. J., & Pandey, S. (1992). Geographic concentration of poverty and risk to children in urban neighborhoods. *American Behavioral Scientist*, *35*, 238–257.
Coulton, C. J., Chan, T., & Mikelbank, K. (2011). Finding place in community change initiatives: Using GIS to uncover resident perceptions of their neighborhoods. *Journal of Community Practice*, *19*, 10–28.
Coulton, C. J., Jennings, M. Z., & Chan, T. (2013). How big is my neighborhood? Individual and contextual effects on perceptions of neighborhood scale. *American Journal of Community Psychology*, *51*, 140–150.
Council of Organizations and Others for Education About Parochiaid, Inc. v. John Engler, Governor of the State of Michigan, 455 Mich. 557 (1997).

Cromley, E. K., & McLafferty, S. L. (2011). GIS and public health. New York, NY: The Guilford Press.
Cullen, J. B., Jacob, B. A., & Levitt, S. D. (2005). The impact of school choice on student outcomes: An analysis of the Chicago Public Schools. *Journal of Public Economics*, *89*, 729–760.
Curtis, J. M. (2012). A fighting chance: Inequities in charter school funding and strategies for achieving equal access to public school funds. *Howard Law Journal*, *55*, 1057–1097.
Curto, V. E., & Fryer, R. G., Jr. (2014). The potential of urban boarding schools for the poor: Evidence from SEED. *Journal of Labor Economics*, *32*, 65–93.
Cutler, D. M., & Glaeser, E. L. (1997). Are ghettos good or bad? *The Quarterly Journal of Economics*, *112*, 827–872.
Cutler, D. M., Glaeser, E. L., & Vigdor, J. L. (1999). The rise and decline of the American ghetto. *The Journal of Political Economy*, *107*, 455–506.
Dai, D. (2010). Black residential segregation, disparities in spatial access to health care facilities, and late-stage breast cancer diagnosis in metropolitan Detroit. *Health & Place*, *16*, 1038–1052.
Dai, D. (2011). Racial/ethnic and socioeconomic disparities in urban green space accessibility: Where to intervene? *Landscape and Urban Planning*, *102*, 234–244.
Dai, D., & Wang, F. (2011). Geographic disparities in accessibility to food stores in southwest Mississippi. *Environment and Planning B: Planning and Design*, *38*, 659–677.
Darden, J. T., & Kamel, S. M. (2000a). Black residential segregation in the city and suburbs of Detroit: Does socioeconomic status matter? *Journal of Urban Affairs*, *22*, 1–13.
Darden, J. T., & Kamel, S. M. (2000b). Spatial and socioeconomic analysis of Latin Americans and Whites in the Toronto CMA. *Journal of Developing Societies*, *16*, 245–270.
Davey, M. (2013, August 26). In Chicago, campaign to provide Safe Passage on way to school. *The New York Times*. Retrieved from http://www.nytimes.com/2013/08/27/education/in-chicago-campaign-to-provide-safe-passage-on-way-to-school.html?_r=0
David, Fred R. (1989). How companies define their mission. *Long Range Planning*, *22*(1), 90–97.
David, Meredith E, David, F. R., & David, F. R. (2014). Mission statement theory and practice: A content analysis and new direction. *International Journal of Business, Marketing, and Decision Sciences*, *7*(1), 95–110.
Davis, J. H., Ruhe, J. A., Lee, M., & Rajadhyaksha, U. (2007). Mission possible: Do school mission statements work? *Journal of Business Ethics*, *70*, 99–110.
Davis, T. M. (2013). Charter school competition, organization, and achievement in traditional public schools. *Education Policy Analysis Archives*, *21*(88).
Davis, T. M., & Oakley, D. (2013). Linking charter school emergence to urban revitalization and gentrification: A socio-spatial analysis of three cities. *Journal of Urban Affairs*, *35*, 81–102.
Dean, J. (1983). Neighborhood impacts of school closings: The case in New York City. *Education and Urban Society*, *15*, 245–254.
Deeds, V., & Pattillo, M. (2015). Organizational "failure" and institutional pluralism: A case study of an urban school closure. *Urban Education*, *50*, 474–504.
DeFilippis, J. (2017). Place matters, but maybe not in the ways they think it does... *Urban Affairs Review, 53,* 189-196.
Dellinger, A. M., & Staunton, C. E. (2002). Barriers to children walking and biking to school - United States, 1999. *Journal of the American Medical Association*, *288*, 1343–1344.

Demissie, F. (2006). Globalization and the remaking of Chicago. In J. P. Koval, L. Bennett, M. I. J. Bennett, F. Demissie, R. Garner, & K. Kim (Eds.), *The new Chicago: A social and cultural analysis* (pp. 19–31). Philadelphia, PA: Temple University Press.

Denton, N. A. (1995). The persistence of segregation: Links between residential segregation and school segregation. *Minnesota Law Review*, *80*, 795–824.

Denton, N. A., & Massey, D. S. (1988). Residential segregation of Blacks, Hispanics, and Asians by socioeconomic status and generation. *Social Science Quarterly*, *69*, 797–817.

Deutsch, M. (1975). Equity, equality, and need: What determines which value will be used as the basis of distributive justice? *Journal of Social Issues*, *31*(3), 137–149.

Dikec, M. (2001). Justice and the spatial imagination. *Environment and Planning A*, *33*, 1785–1805.

Dillon, E. (2008). *Plotting school choice: The challenges of crossing district lines*. *Education Sector*. Washington, DC: Education Sector.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*, 147–160.

DiMartino, C. C., & Jessen, S. B. (2016). School brand management: The policies, practices, and perceptions of branding and marketing in New York City's public high schools. *Urban Education*, *51*, 447–475.

District of Columbia Public Charter School Board. (2015). *Median distance to school*. Washington, DC: District of Columbia Public Charter School Board.

Dorling, D. (1996). Area cartograms: Their use and creation. Norwich, United Kingdom: Environmental Publications, University of East Anglia.

Dougherty, J., Harrelson, J., Maloney, L., Murphy, D., Smith, R., Snow, M., & Zannoni, D. (2009). School choice in suburbia: Test scores, race, and housing markets. *American Journal of Education*, *115*, 523–548.

Dowdall, E. (2011). *Closing public schools in Philadelphia*. Philadelphia, PA: Pew Charitable Trusts.

Drame, E. R., & Frattura, E. (2010). A charter school's journey toward serving all learners: A case study. *Urban Education*, *46*, 55–75.

Dufur, M. J., Parcel, T. L., & Troutman, K. P. (2013). Does capital at home matter more than capital at school?: Social capital effects on academic achievement. *Research in Social Stratification and Mobility*, *31*, 1–21.

Duncombe, W., & Yinger, J. (2007). Does school district consolidation cut costs? *Education Finance and Policy*, *2*, 341–375.

Eckes, S. E., & Plucker, J. A. (2005). Charter schools and gifted education: Legal obligations. *Journal of Law and Education*, *34*, 421–436.

Elacqua, G., Martínez, M., Santos, H., & Urbina, D. (2012). School closures in Chile: Access to quality alternatives in a school choice system. *Estudios De Economía*, *39*, 179–202.

Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate*, *8*, 833–866.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*, 107–115.

Emerson, M. O., Chai, K. J., & Yancey, G. (2001). Does race matter in residential segregation? Exploring the preferences of white Americans. *American Sociological Review*, *66*, 922–935.

Engberg, J., Gill, B., Zamarro, G., & Zimmer, R. W. (2012). Closing schools in a shrinking district: Do student outcomes depend on which schools are closed? *Journal of Urban Economics*, *71*, 189–203.

Ertas, N., & Roch, C. H. (2014). Charter schools, equity, and student enrollments: The role of for-profit Educational Management Organizations. *Education and Urban Society*, *46*, 548–579.

Ewing, E. L. (2015, September 21). "We shall not be moved": A hunger strike, education, and housing in Chicago. *The New Yorker*. Retrieved from http://www.newyorker.com/news/news-desk/we-shall-not-be-moved-a-hunger-strike-education-and-housing-in-chicago

Fabelo, T., Thompson, M. D., Plotkin, M., Carmichael, D., Marchbanks, M. P., & Booth, E. A. (2011). *Breaking schools" rules: A statewide study of how school discipline relates to students" success and juvenile justice involvement*. New York, NY: Council of State Governments Justice Center.

Farley, R., Allen, W. R., National Committee for Research on the 1980 Census. (1989). *The color line and the quality of life in America*. New York, NY: Oxford University Press.

Farrell, C. R. (2008). Bifurcation, fragmentation or integration? The racial and geographical structure of us metropolitan segregation, 1990-2000. *Urban Studies*, *45*, 467–499.

Finn, C. E., Jr, Manno, B. V., & Vanourek, G. (2001). Charter schools in action. Princeton, NJ: Princeton University Press.

Finnigan, K. S., & Lavner, M. (2012). A political analysis of community influence over school closure. *Urban Review*, *44*, 133–151.

Fleming, D. J., Cowen, J. M., Witte, J. F., & Wolf, P. J. (2015). Similar students, different choices: Who uses a school voucher in an otherwise similar population of students? *Education and Urban Society*, *47*, 785–812.

Florida, R., & Bendix, A. (2015, October 12). Mapping the great housing divide in New York and San Francisco. *CITYLAB From the Atlantic*. Retrieved from http://www.citylab.com/housing/2015/10/mapping-the-great-housing-divide-in-new-york-and-san-francisco/405022/

Foley, D. L. (1973). Institutional and contextual factors affecting the housing choices of minority residents. In A. H. Hawley & V. P. Rock (Eds.), *Segregation in residential areas: Papers on racial and socioeconomic factors in choice of housing* (pp. 85–147). Washington, DC: National Academy of Sciences.

Folger, R., Sheppard, B. H., & Buttram, R. T. (1995). Equity, equality, and need: Three faces of social justice. In B. B. Bunker & J. Z. Rubin (Eds.), *Conflict, cooperation, and justice: Essays inspired by the work of Morton Deutsch* (pp. 261–289). San Francisco, CA: Jossey-Bass.

Fortney, J., Rost, K., & Warren, J. (2000). Comparing alternative methods of measuring geographic access to health services. *Health Services and Outcomes Research Methodology*, *1*, 173–184.

Fox, R. A., Buchanan, N. K., Eckes, S. E., & Basford, L. E. (2012). The line between cultural education and religious education: Do ethnocentric niche charter schools have a prayer? *Review of Research in Education*, *36*, 282–305.

Frankenberg, E., Siegel-Hawley, G., & Wang, J. (2011). Choice without equity: Charter school segregation. *Education Policy Analysis Archives*, *19*(1). Retrieved from http://epaa.asu.edu/ojs/article/view/779

Frey, W. H. (2011). *Melting pot cities and suburbs: Racial and ethnic change in metro America in the 2000s*. Washington, DC: The Brookings Institution.
Friedman, M. (1955). The role of government in education. In R. A. Solo (Ed.), *Economics and the public interest* (pp. 127–134). New Brunswick, NJ: Rutgers University Press.
Friedman, M. (2002). Capitalism and freedom. Chicago, IL: University of Chicago Press.
Frug, G. E. (2000). Against centralization. *Buffalo Law Review*, *48*, 31–48.
Fullan, M., & Boyle, A. (2014). Big-city school reforms: Lessons from New York, Toronto, and London. New York, NY: Teachers College Press.
Fyhri, A., Hjorthol, R., Mackett, R. L., Fotel, T. N., & Kyttä, M. (2011). Children's active travel and independent mobility in four countries: Development, social contributing trends and measures. *Transport Policy*, *18*, 703–710.
Galster, G. C. (1988). Residential segregation in American cities: A contrary review. *Population Research and Policy Review*, *7*, 93–112.
Galster, G. C., & Killen, S. P. (1995). The geography of metropolitan opportunity: A reconnaissance and conceptual framework. *Housing Policy Debate*, *6*, 7–43.
Garcia, D. R. (2008a). Academic and racial segregation in charter schools: Do parents sort students into specialized charter schools? *Education and Urban Society*, *40*, 590–612.
Garcia, D. R. (2008b). The impact of school choice on racial segregation in charter schools. *Educational Policy*, *22*, 805–829.
Garnett, N. S. (2014). Disparate impact, school closures, and parental choice. *University of Chicago Legal Forum*, *2014*, 289–344. Retrieved from http://chicagounbound.uchicago.edu/uclf/vol2014/iss1/5
Gastner, M. T., & Newman, M. E. (2004). Diffusion-based method for producing density-equalizing maps. *Proceedings of the National Academy of Sciences of the United States of America*, *101*, 7499–7504.
Gautier, P. A., & Zenou, Y. (2010). Car ownership and the labor market of ethnic minorities. *Journal of Urban Economics*, *67*, 392–403.
Gibbons, S., & Machin, S. (2006). Paying for primary schools: Admission constraints, school popularity or congestion? *The Economic Journal*, *116*, C77–C92.
Gibbons, S., Machin, S., & Silva, O. (2013). Valuing school quality using boundary discontinuities. *Journal of Urban Economics*, *75*, 15–28.
Gibson, A., & Asthana, S. (2000). Local markets and the polarization of public‐sector schools in England and Wales. *Transactions of the Institute of British Geographers*, *25*, 303–319.
Giersch, J. (2014). Aiming for giants: Charter school legislation and the power of teacher unions. *Education and Urban Society*, *46*, 653–671.
Gill, B., Timpane, P. M., Ross, K. E., Brewer, D. J., & Booker, K. (2001). *Rhetoric versus reality: What we know and what we need to know about vouchers and charter schools*. Santa Monica, CA: RAND Corporation.
Glaeser, E. L., Gyourko, J., & Saks, R. E. (2005). Urban growth and housing supply. *Journal of Economic Geography*, *6*, 71–89.
Glatter, R., Woods, P. A., & Bagley, C. (1997). Diversity, differentiation and hierarchy. In R. Glatter, P. A. Woods, & C. Bagley (Eds.), *Choice and diversity in schooling: Perspectives and prospects* (pp. 7–28). New York, NY: Routledge.
Glazerman, S. M., & Dotter, D. (2016). *Market signals: Evidence on the determinants and consequences of school choice from a citywide lottery* (No. Working Paper 45) (Vol. Washington, DC). Mathematica Policy Research.

Glomm, G., Harris, D. N., & Lo, T.-F. (2005). Charter school location. *Economics of Education Review*, *24*, 451–457.

Goldhaber, D. D., Guin, K., Henig, J. R., Hess, F. M., & Weiss, J. (2005). How school choice affects students who do not choose. In J. R. Betts & T. Loveless (Eds.), *Getting choice right: Ensuring equity and efficiency in education policy* (pp. 101–129). Washington, DC: Brookings Institution Press.

Good, T. L., Braden, J. S., & Drury, D. W. (2000). Charting a new course. Alexandria, VA: National School Boards Association.

Gorard, S., & Fitz, J. (1998). The more things change... The missing impact of marketisation? *British Journal of Sociology of Education*, *19*, 365–376.

Goyette, K. A. (2008). Race, social background, and school choice options. *Equity & Excellence in Education*, *41*, 114–129.

Grant, C. A., Floch Arcello, A., Konrad, A. M., & Swenson, M. C. (2014). Fighting for the "right to the city": Examining spatial injustice in Chicago public school closings. *British Journal of Sociology of Education*, *35*(5), 670–687.

Grbic, D., Hafferty, F. W., & Hafferty, P. K. (2013). Medical school mission statements as reflections of institutional identity and educational purpose. *Academic Medicine*, *88*, 852–860.

Gregory, A., Skiba, R. J., & Noguera, P. A. (2010). The achievement gap and the discipline gap: Two sides of the same coin? *Educational Researcher*, *39*, 59–68.

Guagliardo, M. F. (2004). Spatial accessibility of primary care: Concepts, methods and challenges. *International Journal of Health Geographics*, *3*(3).

Gulliford, M., Figueroa-Munoz, J., Morgan, M., Hughes, D., Gibson, B., Beech, R., & Hudson, M. (2002). What does" access to health care" mean? *Journal of Health Services Research & Policy*, *7*, 186–188.

Gulosino, C., & d'Entremont, C. (2011). Circles of influence: An analysis of charter school location and racial patterns at varying geographic scales. *Education Policy Analysis Archives*, *19*(8). Retrieved from http://epaa.asu.edu/ojs/article/view/842

Gulosino, C., & Lubienski, C. A. (2011). Schools' strategic responses to competition in segregated urban areas: Patterns in school locations in metropolitan Detroit. *Education Policy Analysis Archives*, *19*(13). Retrieved from http://epaa.asu.edu/ojs/article/view/829

Hamnett, C., & Butler, T. (2011). Geography matters: The role distance plays in reproducing educational inequality in East London. *Transactions of the Institute of British Geographers*, *36*, 479–500.

Hamnett, C., & Butler, T. (2013). Distance, education and inequality. *Comparative Education*, *49*, 317–330.

Handy, S. L., & Niemeier, D. A. (1997). Measuring accessibility: An exploration of issues and alternatives. *Environment and Planning A*, *29*, 1175–1194.

Hansen, W. G. (1959). How accessibility shapes land use. *Journal of the American Institute of Planners*, *25*, 73–76.

Harvey, D. (1992). Social justice, postmodernism and the city. *International Journal of Urban and Regional Research*, *16*, 588–601.

Hastings, J. S., Kane, T. J., & Staiger, D. O. (2005). *Parental preferences and school competition: Evidence from a public school choice program* (No. 11805). Cambridge, MA: National Bureau of Economic Research.

Hay, A. M. (1995). Concepts of equity, fairness and justice in geographical studies. *Transactions of the Institute of British Geographers*, *20*, 500–508.
Hayes, K. J., & Taylor, L. L. (1996). Neighborhood school characteristics: What signals quality to home buyers? *Federal Reserve Bank of Dallas Economic Review*, *4th quarter*, 2–9.
Haynes, K. T., Phillips, K. J. R., & Goldring, E. B. (2010). Latino parents' choice of magnet school: How school choice differs across racial and ethnic boundaries. *Education and Urban Society*, *42*, 758–789.
Heidkamp, C. P., & Lucas, S. (2006). Finding the gentrification frontier using Census data: The case of Portland, Maine. *Urban Geography*, *27*, 101–125.
Hemphill, C., & Nauer, K. (2009). *The new marketplace: How small-school reforms and school choice have reshaped New York City's high schools*. New York, NY: Center for New York City Affairs.
Henig, J. R. (1995). Rethinking school choice: Limits of the market metaphor. Princeton, NJ: Princeton University Press.
Henig, J. R. (2009). Spin cycle: How research is used in policy debates: The case of charter schools. New York, NY: Russell Sage Foundation.
Henig, J. R., & Sugarman, S. D. (1999). The nature and extent of school choice. In S. D. Sugarman & F. R. Kemerer (Eds.), *School choice and social controversy: Politics, policy, and law* (pp. 13–35). Washington, DC: Brookings Institution Press.
Henig, J. R., Holyoke, T. T., Brown, H., & Lacireno-Paquet, N. (2005). The influence of founder type on charter school structures and operations. *American Journal of Education*, *111*, 487–588.
Hennig, B. D. (2013). Rediscovering the world: Map transformations of human and physical space. London, United Kingdom: Springer.
Henriques, R., Bação, F., & Lobo, V. (2009). Carto-SOM: Cartogram creation using self-organizing maps. *International Journal of Geographical Information Science*, *23*, 483–511.
Herbert, D. T. (2000). School choice in the local environment: Headteachers as gatekeepers on an uneven playing field. *School Leadership & Management*, *20*, 79–97.
Herbert, D. T., & Thomas, C. J. (1998). School performance, league tables and social geography. *Applied Geography*, *18*, 199–223.
Hernández, L. E. (2016). Race and racelessness in CMO marketing: Exploring charter management organizations' racial construction and its implications. *Peabody Journal of Education*, *91*, 47–63.
Highsmith, A. R., & Erickson, A. T. (2015). Segregation as splitting, segregation as joining: Schools, housing, and the many modes of Jim Crow. *American Journal of Education*, *121*, 563–595.
Hochschild, J. L. (2005). What school boards can and cannot (or will not) accomplish. In W. G. Howell (Ed.), *Besieged: School boards and the future of education politics* (pp. 324–338). Washington, DC: Brookings Institution Press.
Holme, J. J. (2002). Buying homes, buying schools: School choice and the social construction of school quality. *Harvard Educational Review*, *72*, 177–206.
Holme, J. J., Finnigan, K. S., & Diem, S. (2016). Challenging boundaries, changing fate? Metropolitan inequality and the legacy of Milliken. *Teachers College Record*, *118*(3). Retrieved from https://tcrecord.org/library/abstract.asp?contentid=18247

Holmes, G. M., DeSimone, J., & Rupp, N. G. (2003). *Does school choice increase school quality?* Cambridge, MA: National Bureau of Economic Research.
Holyoke, T. T., Henig, J. R., Brown, H., & Lacireno-Paquet, N. (2009). Policy dynamics and the evolution of state charter school laws. *Policy Sciences*, *42*, 33–55.
Horn, J. G., & Miron, G. (2000). *An evaluation of the Michigan charter school initiative*. Kalamozoo, MI: The Evaluation Center, Western Michigan University.
Horvat, E. M., Weininger, E. B., & Lareau, A. (2003). From social ties to social capital: Class differences in the relations between schools and parent networks. *American Educational Research Journal*, *40*, 319–351.
Hoxby, C. M., & Murarka, S. (2009). *Charter schools in New York City* (No. 14852). Cambridge, MA: National Bureau of Economic Research.
Hoxby, C. M., Murarka, S., & Kang, J. (2009). *How New York City's charter schools affect achievement*. *The New York City Charter Schools Evaluation Project 2009*. New York, NY: New York City Charter Schools Evaluation Project.
Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*, 1277–1288.
Hu, L. (2014). Changing job access of the poor: Effects of spatial and socioeconomic transformations in Chicago, 1990–2010. *Urban Studies*, *51*, 675–692.
Huerta, L. A., & Zuckerman, A. (2009). An institutional theory analysis of charter schools: Addressing institutional challenges to scale. *Peabody Journal of Education*, *84*, 414–431.
Huff, D. L., & Jenks, G. F. (1968). A graphic interpretation of the friction of distance in gravity models. *Annals of the Association of American Geographers*, *58*, 814–824.
Hwang, J. (2015). Gentrification in changing cities: Immigration, new diversity, and racial inequality in neighborhood renewal. *The Annals of the American Academy of Political and Social Science*, *660*, 319–340.
Iatarola, P., Schwartz, A. E., Stiefel, L., & Chellman, C. C. (2008). Small schools, large districts: Small-school reform and New York City's students. *Teachers College Record*, *110*, 1837–1878.
Iceland, J. (2004). Beyond black and white: Metropolitan residential segregation in multi-ethnic America. *Social Science Research*, *33*, 248–271.
Iceland, J., & Wilkes, R. (2006). Does socioeconomic status matter? Race, class, and residential segregation. *Social Problems*, *53*, 248–273.
Iceland, J., Weinberg, D. H., & Steinmetz, E. (2002). *Racial and ethnic residential segregation in the U.S.* (No. CENSR-3). Washington, DC: US Census Bureau.
Imberman, S. A., Naretta, M., & O'Rourke, M. (2015). *Capitalization of charter schools into residential property values* (No. 20990). Cambridge, MA: National Bureau of Economic Research.
Jabbar, H. (2016). Selling schools: Marketing and recruitment strategies in New Orleans. *Peabody Journal of Education*, *91*, 4–23.
Jacobs, N. (2013). Understanding school choice: Location as a determinant of charter school racial, economic, and linguistic segregation. *Education and Urban Society*, *45*, 459–482.
Jargowsky, P. A. (1996). Take the money and run: economic segregation in US metropolitan areas. *American Sociological Review*, *61*, 984–998.
Jargowsky, P. A. (2014). Segregation, neighborhoods, and schools. In A. Lareau & K. A. Goyette (Eds.), *Choosing homes, choosing schools* (pp. 97–136). New York, NY: Russell Sage Foundation.

Jin, J., & Paulsen, K. (in press). Does accessibility matter? Understanding the effect of job accessibility on labour market outcomes. *Urban Studies*. doi: 10.1177/0042098016684099

Johnson, A. W. (2012). "Turnaround" as shock therapy: Race, neoliberalism, and school reform. *Urban Education*, *48*, 232–256.

Johnston, R., Poulsen, M., & Forrest, J. (2007). Ethnic and racial segregation in U.S. metropolitan areas, 1980-2000: The dimensions of segregation revisited. *Urban Affairs Review*, *42*, 479–504.

Kain, J. F. (1968). Housing segregation, Negro employment and metropolitan decentralization. *The Quarterly Journal of Economics*, *83*, 175–197.

Kain, J. F. (1992). The spatial mismatch hypothesis: Three decades later. *Housing Policy Debate*, *3*, 371–460.

Kain, J. F. (2004). A pioneer's perspective on the spatial mismatch literature. *Urban Studies*, *41*, 7–32.

Karp, S. (2015, May 26). The price of fundraising. *Catalyst Chicago*. Retrieved from http://catalyst-chicago.org/2015/05/the-price-of-fundraising/

Katznelson, I., & Weir, M. (1985). Schooling for all: Class, race, and the decline of the democratic ideal. New York, NY: Basic Books.

Kearns, R. A., Lewis, N., McCreanor, T., & Witten, K. (2009). "The status quo is not an option": Community impacts of school closure in South Taranaki, New Zealand. *Journal of Rural Studies*, *25*, 131–140.

Kelejian, H. H., & Prucha, I. R. (1999). A generalized moments estimator for the autoregressive parameter in a spatial model. *International Economic Review*, *40*, 509–533.

Kenn, D. (2001). Institutionalized, legal racism: Housing segregation and beyond. *Boston University Public Interest Law Journal*, *11*, 35–72.

Kirk, D. S., & Sampson, R. J. (2012). Juvenile arrest and collateral educational damage in the transition to adulthood. *Sociology of Education*, *86*, 36–62.

Kleitz, B., Weiher, G. R., Tedin, K. L., & Matland, R. (2000). Choice, charter schools, and household preferences. *Social Science Quarterly*, *81*, 846–854.

Knox, P. L. (1978). The intraurban ecology of primary medical care: Patterns of accessibility and their policy implications. *Environment and Planning A*, *10*, 415–435.

Kotler, P. (1995). Strategic marketing for educational institutions. Englewood Cliffs, NJ: Prentice Hall.

Kotok, S., Frankenberg, E., Schafft, K. A., Mann, B., & Fuller, E. J. (in press). School choice, racial segregation, and poverty concentration: Evidence from Pennsylvania charter school transfers. *Educational Policy*. doi: 10.1177/0895904815604112

Kraus, N. (2008). Concentrated poverty and urban school reform: "The choice is yours" in Minneapolis. *Equity & Excellence in Education*, *41*, 262–274.

Krieger, N., Chen, J. T., Waterman, P. D., Soobader, M.-J., Subramanian, S. V., & Carson, R. (2002). Geocoding and monitoring of us socioeconomic inequalities in mortality and cancer incidence: Does the choice of area-based measure and geographic level matter? *American Journal of Epidemiology*, *156*, 471–482.

Krivo, L. J., Peterson, R. D., & Kuhl, D. C. (2009). Segregation, racial structure, and neighborhood violent crime. *American Journal of Sociology*, *114*, 1765–1802.

Krysan, M., & Bader, M. D. M. (2009). Racial blind spots: Black-White-Latino differences in community knowledge. *Social Problems*, *56*, 677–701.

Krysan, M., Couper, M. P., Farley, R., & Forman, T. A. (2009). Does race matter in neighborhood preferences? Results from a video experiment. *American Journal of Sociology*, *115*, 527–559.

Kúscová, S., & Buckley, J. (2004). The Effect of Charter School Legislation on Market Share. *Education Policy Analysis Archives*, *12*(0), 66. Retrieved from http://epaa.asu.edu/ojs/index.php/epaa/article/view/221

Kwan, M. P. (1998). Space‐time and integral measures of individual accessibility: A comparative analysis using a point‐based framework. *Geographical Analysis*, *30*, 191–216.

la Torre, de, M., & Gwynne, J. (2009). *When schools close: Effects on displaced students in Chicago Public Schools*. Chicago, IL: Consortium on Chicago School Research, University of Chicago.

Lacireno-Paquet, N., Holyoke, T. T., Moser, M., & Henig, J. R. (2002). Creaming versus cropping: Charter school enrollment practices in response to market incentives. *Educational Evaluation and Policy Analysis*, *24*, 145–158.

LaFleur, J. C. (2016). Locating Chicago's charter schools: A socio-spatial analysis. *Education Policy Analysis Archives*, *24*(24). doi: 10.14507/epaa.24.1745

Langford, M., Fry, R., & Higgs, G. (2012). Measuring transit system accessibility using a modified two-step floating catchment technique. *International Journal of Geographical Information Science*, *26*, 193–214.

Lareau, A. (2014). Schools, housing, and the reproduction of inequality. In A. Lareau & K. A. Goyette (Eds.), *Choosing homes, choosing schools* (pp. 169–206). New York, NY: Russell Sage Foundation.

Lareau, A., & Goyette, K. A. (Eds.). (2014). Choosing homes, choosing schools. New York, NY: Russell Sage Foundation.

Larsen, K., & Gilliland, J. (2008). Mapping the evolution of "food deserts" in a Canadian city: Supermarket accessibility in London, Ontario, 1961–2005. *International Journal of Health Geographics*, *7*(16).

Larsen, K., Buliung, R. N., & Faulkner, G. E. J. (2015). School travel: How the built and social environment relate to children's walking and independent mobility in the Greater Toronto and Hamilton area, Ontario, Canada. *Transportation Research Record: Journal of the Transportation Research Board*, *2513*, 80–89.

Lauder, H., & Hughes, D. (1999). Trading in futures: Why markets in education don't work. Philadelphia, PA: Open University Press.

Lavy, V. (2010). Effects of free choice among public schools. *The Review of Economic Studies*, *77*, 1164–1191.

Lawyers' Committee for Better Housing. (2013). *Housing instability for renters continues: Chicago responds with adoption of New Tenant Protections*. Chicago, IL: Lawyers' Committee for Better Housing.

Layton, L. (2014, May 13). Are school closings the "new Jim Crow?" Activists file civil rights complaints. *The Washington Post*. Retrieved from https://www.washingtonpost.com/local/education/2014/05/13/1a0d3ae8-dab9-11e3-b745-87d39690c5c0_story.html

Le Grand, J. (1991). Equity and choice: An essay in economics and applied philosophy. London, United Kingdom: Routledge.

Lee, J. (2016). Paying for school choice: Availability differences among local education markets. *International Journal of Education Policy and Leadership*, *11*(5). Retrieved from http://journals.sfu.ca/ijepl/index.php/ijepl/issue/view/95

Lewis, J. H., & Hamilton, D. K. (2011). Race and regionalism: The structure of local government and racial disparity. *Urban Affairs Review*, *47*, 349–384.

Lian, M., Struthers, J., & Schootman, M. (2012). Comparing GIS-based measures in access to mammography and their validity in predicting neighborhood risk of late-stage breast cancer. *PLoS ONE*, *7*(8).

Lichter, D. T., Parisi, D., & Taquino, M. C. (2012). The geography of exclusion: race, segregation, and concentrated poverty. *Social Problems*, *59*, 364–388.

Lichter, D. T., Parisi, D., & Taquino, M. C. (2015). Spatial assimilation in U.S. cities and communities? Emerging patterns of Hispanic segregation from Blacks and Whites. *The Annals of the American Academy of Political and Social Science*, *660*, 36–56.

Lipman, P. (2002). Making the global city, making inequality: The political economy and cultural politics of Chicago school policy. *American Educational Research Journal*, *39*, 379–419.

Lipman, P. (2003). Chicago school policy: Regulating Black and Latino youth in the global city. *Race Ethnicity and Education*, *6*, 331–355.

Lipman, P. (2008). Mixed‐income schools and housing: Advancing the neoliberal urban agenda. *Journal of Education Policy*, *23*, 119–134.

Lipman, P. (2009). The cultural politics of mixed-income schools and housing: A racialized discourse of displacement, exclusion, and control. *Anthropology & Education Quarterly*, *40*, 215–236.

Lipman, P. (2011). The new political economy of urban education: Neoliberalism, race, and the right to the city. New York, NY: Routledge.

Lipman, P. (2013). Economic crisis, accountability, and the state's coercive assault on public education in the USA. *Journal of Education Policy*, *28*, 557–573.

Lipman, P. (2015). Capitalizing on crisis: Venture philanthropy's colonial project to remake urban education. *Critical Studies in Education*, *56*, 241–258.

Lipman, P., & Haines, N. (2007). From accountability to privatization and African American exclusion: Chicago's 'Renaissance 2010'. *Educational Policy*, *21*, 471–502.

Lipman, P., & Hursh, D. (2007). Renaissance 2010: The reassertion of ruling-class power through neoliberal policies in Chicago. *Policy Futures in Education*, *5*, 160–178.

Logan, J. R., & Oakley, D. (2012). Schools matter. In W. F. Tate IV (Ed.), *Research on Schools, Neighborhoods and Communities* (pp. 103–123). New York, NY: Rowman & Littlefield Publishers.

Logan, J. R., Stults, B. J., & Farley, R. (2004). Segregation of minorities in the metropolis: Two decades of change. *Demography*, *41*, 1–22.

Loveless, T. (2002). Charter school achievement and accountability. Presented at the Program on Education Policy and Governance, Boston, MA: Programme on Education Policy and Governance Working Papers Series.

Lubienski, C. A. (2003). Innovation in education markets: Theory and evidence on the impact of competition and choice in charter schools. *American Educational Research Journal*, *40*, 395–443.

Lubienski, C. A. (2004). Charter school innovations in theory and practice: Autonomy, R&D and curricular conformity. In K. E. Bulkley & P. Wohlstetter (Eds.), *Taking account of charter schools What's happened and what's next* (pp. 72–90). New York, NY: Teachers College Press.

Lubienski, C. A. (2005). School choice as a civil right: District responses to competition and equal educational opportunity. *Equity & Excellence in Education*, *38*, 331–341.

Lubienski, C. A. (2006). Incentives for school diversification: Competition and promotional patterns in local education markets. *Journal of School Choice*, *1*(2), 1–31.

Lubienski, C. A., & Dougherty, J. (2009). Mapping educational opportunity: Spatial analysis and school choices. *American Journal of Education*, *115*, 485–491.

Lubienski, C. A., & Weitzel, P. C. (2008). Choice, Integration, and Educational Opportunity: Evidence on Competitive Incentives for Student Sorting in Charter Schools. *Journal of Gender, Race & Justice*, *12*, 351–376.

Lubienski, C. A., & Weitzel, P. C. (Eds.). (2010). The charter school experiment: Expectations, evidence and implications. Cambridge, MA: Harvard Education Press.

Lubienski, C. A., Gulosino, C., & Weitzel, P. C. (2009). School choice and competitive incentives: Mapping the distribution of educational opportunities across local education markets. *American Journal of Education*, *115*, 601–647.

Lubienski, C. A., Linick, M., & York, J. G. (2012). School marketing in the United States: Demographic representations and dilemmas for educational leaders. In I. Oplatka & J. Hemsley-Brown (Eds.), *The management and leadership of educational marketing Research, practice and applications (Advances in educational administration Vol. 15)* (pp. 109–135). Bingley, United Kingdom: Emerald Group Publishing Limited.

Lubienski, S. T., & Lubienski, C. A. (2006). School sector and academic achievement: A multilevel analysis of NAEP mathematics data. *American Educational Research Journal*, *43*, 651–698.

Luo, W., & Qi, Y. (2009). An enhanced two-step floating catchment area (E2SFCA) method for measuring spatial accessibility to primary care physicians. *Health & Place*, *15*, 1100–1107.

Luo, W., & Wang, F. (2003). Measures of spatial accessibility to health care in a GIS environment: Synthesis and a case study in the Chicago region. *Environment and Planning B: Planning and Design*, *30*, 865–884.

Luo, W., & Whippo, T. (2012). Variable catchment sizes for the two-step floating catchment area (2SFCA) method. *Health & Place*, *18*, 789–795.

Lytton, M. (2011). Have all the costs of closing a school been considered? *CELE Exchange*, *2011/08*.

Makarewicz, C. (2013). Vouchers, magnet schools, charter schools, and options: Analyzing the effects of school and housing choices on mode choice to school. *Transportation Research Record: Journal of the Transportation Research Board*, *2327*, 1–8.

Marshall, J. D., Wilson, R. D., Meyer, K. L., Rajangam, S. K., McDonald, N. C., & Wilson, E. J. (2010). Vehicle emissions during children's school commuting: Impacts of education policy. *Environmental Science & Technology*, *44*, 1537–1543.

Martin, S., & Carlson, S. (2005). Barriers to children walking to or from school-United States, 2004. *Journal of the American Medical Association*, *294*, 2160–2162.

Massey, D. S., & Denton, N. A. (1988). Suburbanization and segregation in US metropolitan areas. *American Journal of Sociology*, *94*, 592–626.

Massey, D. S., & Denton, N. A. (1989). Hypersegregation in U.S. metropolitan areas: Black and Hispanic segregation along five dimensions. *Demography*, *26*, 373–391.
Massey, D. S., & Denton, N. A. (1993). American apartheid: Segregation and the making of the underclass. Cambridge, MA: Harvard University Press.
Massey, D. S., & Fischer, M. J. (1999). Does rising income bring integration? New results for blacks, Hispanics, and Asians in 1990. *Social Science Research*, *28*, 316–326.
Massey, D. S., & Mullan, B. P. (1984). Processes of Hispanic and black spatial assimilation. *American Journal of Sociology*, *89*, 836–873.
Mavrogordato, M., & Stein, M. L. (2016). Accessing choice: A mixed-methods examination of how Latino parents engage in the educational marketplace. *Urban Education*, *51*, 1031–1064.
Mayer, C. J. (1996). Does location matter? *New England Economic Review*, *May/June*, 26–40.
McDonald, N. C. (2007). Active transportation to school: Trends among U.S. schoolchildren, 1969–2001. *American Journal of Preventive Medicine*, *32*, 509–516.
McDonald, N. C. (2008). Children's mode choice for the school trip: The role of distance and school location in walking to school. *Transportation*, *35*, 23–35.
McDonald, N. C., & Aalborg, A. E. (2009). Why parents drive children to school: Implications for safe routes to school programs. *Journal of the American Planning Association*, *75*, 331–342.
McDonald, N. C., Brown, A. L., Marchetti, L. M., & Pedroso, M. S. (2011). U.S. school travel, 2009. *American Journal of Preventive Medicine*, *41*, 146–151.
McGrail, M. R., & Humphreys, J. S. (2009). Measuring spatial accessibility to primary care in rural areas: Improving the effectiveness of the two-step floating catchment area method. *Applied Geography*, *29*, 533–541.
McLafferty, S. L. (1982). Urban structure and geographical access to public services. *Annals of the Association of American Geographers*, *72*, 347–354.
McMillan, T. E. (2005). Urban form and a child's trip to school: The current literature and a framework for future research. *Journal of Planning Literature*, *19*, 440–456.
McMillan, T. E., Day, K., Boarnet, M., Alfonzo, M., & Anderson, C. (2006). Johnny walks to school-Does Jane? Sex differences in children's active travel to school. *Children, Youth and Environments*, *16*, 75–89.
McShane, M. Q., & Hatfield, J. (2015). *Measuring diversity in charter school offerings*. Washington, DC: American Enterprise Institute.
Meacham, J. (2008). What's the use of a mission statement? *Academe*, *94*(1), 21–24.
Merseth, K., Cooper, K., Roberts, J., Tieken, M. C., Valant, J., & Wynne, C. (2009). Inside urban charter schools. Cambridge, MA: Harvard Education Press.
Metz, M. H. (1989). Real school: A universal drama amid disparate experience. *Journal of Education Policy*, *4*(5), 75–91.
Meyer, J. W. (1986). Organizations as ideological systems. In T. J. Sergiovanni & J. E. Corbally (Eds.), *Leadership and organizational culture: New perspectives on administrative theory and practice* (pp. 186–205). Urbana, IL: University of Illinois Press.
Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, *83*, 340–363.
Meyer, J. W., & Rowan, B. (1978). The structure of educational organizations. In M. W. Meyer (Ed.), *Environments and organizations* (pp. 78–109). San Francisco, CA: Jossey-Bass.

Michigan Department of Education. (2010). *Public School Academy report to the Legislature.* Lansing, MI: Michigan Department of Education.
Millimet, D. L., & Collier, T. (2008). Efficiency in public schools: Does competition matter? *Journal of Econometrics*, *145*, 134–157.
Miron, G., & Gulosino, C. (2013). *Profiles of for-profit and nonprofit education management organizations: Fourteenth edition, 2011-2012*. Boulder, CO: National Education Policy Center.
Miron, G., & Horn, J. G. (2002). *Evaluation of Connecticut charter schools and the charter school initiative*. Kalamazoo, MI: The Evaluation Center, Western Michigan University.
Miron, G., & Nelson, C. (2002). What's public about charter schools?: Lessons learned about choice and accountability. Thousand Oak, CA: Corwin Press.
Miron, G., Nelson, C., & Risley, J. (2002). *Strengthening Pennsylvania's charter school reform: Findings from the statewide evaluation*. Kalamazoo, MI: The Evaluation Center, Western Michigan University.
Miron, G., Urschel, J. L., Mathis, W. J., & Tornquist, E. (2010). *Schools without diversity: Education management organizations, charter schools, and the demographic stratification of the American school system*. *Education and the Public Interest Center & Education Policy Research Unit*. Boulder, CO & Tempe, AZ: Education and the Public Interest Center & Education Policy Research Unit.
Mitchell, D. E., Batie, M., & Mitchell, R. E. (2010). The contributions of school desegregation to housing integration: Case studies in two large urban areas. *Urban Education*, *45*, 166–193.
Mladenka, K. R. (1989). The distribution of an urban public service: The changing role of race and politics. *Urban Affairs Review*, *24*, 556–583.
Morley, J. (2006). For-profit and nonprofit charter schools: An agency costs approach. *The Yale Law Journal*, *115*, 1782–1821.
Morphew, C. C., & Hartley, M. (2006). Mission statements: A thematic analysis of rhetoric across institutional type. *The Journal of Higher Education*, *77*, 456–471.
Morrill, R. L. (1995). Racial segregation and class in a liberal metropolis. *Geographical Analysis*, *27*, 22–41.
Morrill, R. L., & Symons, J. (1977). Efficiency and equity aspects of optimum location. *Geographical Analysis*, *9*, 215–225.
Müller, S. (2011). Assessment of school closures in urban areas by simple accessibility measures. *Erdkunde*, *65*, 401–414.
National Alliance for Public Charter School. (2012). *A growing movement: America's largest charter school communities*. Washington, DC: National Alliance for Public Charter Schools.
National Alliance for Public Charter School. (2013). *A growing movement: America's largest charter school communities*. Washington, DC: National Alliance for Public Charter Schools.
National Centers for Education Statistics. (2010). *Common Core of Data [Data file]*. Retrieved from http://nces.ed.gov/ccd/
National Center for Safe Routes to School. (2013). *Trends in walking and bicycling to school from 2007 to 2012*. Washington, DC: National Center for Safe Routes to School, U.S. Department of Transportation.

National Fair Housing Alliance. (2006). *Unequal opportunity—Perpetuating housing segregation in America*. New York, NY: National Fair Housing Alliance.
Nechyba, T. J. (2003). School finance, spatial income segregation, and the nature of communities. *Journal of Urban Economics*, *54*, 61–88.
Nechyba, T. J. (2010). Tiebout sorting and competition. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (pp. 338–393). Cambridge, MA: Elsevier.
Nelson, A. A., & Gazley, B. (2014). The rise of school-supporting nonprofits. *Education Finance and Policy*, *9*, 541–566.
Nelson, A. C., Dawkins, C. J., & Sanchez, T. W. (2004). Urban containment and residential segregation: A preliminary investigation. *Urban Studies*, *41*, 423–439.
Neuman, S. B., & Celano, D. (2001). Access to print in low-income and middle-income communities: An ecological study of four neighborhoods. *Reading Research Quarterly*, *36*(1), 8–26.
New York Appleseed. (2013). *Within our reach: Segregation in NYC district elementary schools and what we can do about it: School-to-school diversity*. New York, NY: New York Appleseed.
Newsom, W., & Hayes, C. (1991). Are mission statements worthwhile? *Planning for Higher Education*, *19*, 28–30.
Nicholls, S. (2001). Measuring the accessibility and equity of public parks: A case study using GIS. *Managing Leisure*, *6*, 201–219.
Nitta, K. A., Holley, M. J., & Wrobel, S. L. (2010). A phenomenological study of rural school consolidation. *Journal of Research in Rural Education*, *25*(2), 1–19.
Office of the United Nations High Commissioner for Human Rights. (2016, February 5). Statement to the media by the United Nations' working group of experts on people of African descent, on the conclusion of its official visit to USA, 19-29 January 2016. Retrieved February 5, 2016, from http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=17000&LangID=E
Oh, K., & Jeong, S. (2007). Assessing the spatial distribution of urban parks using GIS. *Landscape and Urban Planning*, *82*, 25–32.
Ong, P. M., & Rickles, J. (2004). The continued nexus between school and residential segregation. *Berkeley Journal of African-American Law & Policy*, *6*(2), 1–17.
Orfield, G. (2013). Housing segregation produces unequal schools: Causes and solutions. In P. L. Carter & K. G. Welner (Eds.), *Closing the opportunity gap: What America must do to give every child an even chance* (pp. 40–60). New York, NY: Oxford University Press.
Orfield, G. (2014). Tenth Annual Brown Lecture in education research: A new civil rights agenda for American education. *Educational Researcher*, *43*, 273–292.
Orfield, G., & Frankenberg, E. (2014). *Brown at 60: Great progress, a long retreat and on uncertain future*. Cambridge, MA: The Civil Rights Project at Harvard University.
Orfield, G., & Monfort, F. (1992). *Status of School Desegregation*. Alexandria, VA: National School Boards Association.
Ortiz, F. (2015, September 8). Chicago's back-to-school season comes with gang protections for kids. *Reuters*. Retrieved from http://www.reuters.com/article/2015/09/08/us-usa-chicago-education-idUSKCN0R82ES20150908#WfTZVlEV6Q2xzzIK.97

Owens, A. (2015). Assisted housing and income segregation among neighborhoods in U.S. metropolitan areas. *The Annals of the American Academy of Political and Social Science*, *660*, 98–116.
Owens, A. (2016). Inequality in children's contexts: Income segregation of households with and without children. *American Sociological Review*, *81*, 549–574.
Pacione, M. (1989). Access to urban services: The case of secondary schools in Glasgow. *Scottish Geographical Magazine*, *105*, 12–18.
Paino, M., Boylan, R. L., & Renzulli, L. A. (in press). The closing door: The effect of race on charter school closures. *Sociological Perspectives*. doi: 10.1177/0731121416674948
Paino, M., Renzulli, L. A., Boylan, R. L., & Bradley, C. L. (2014). For grades or money? Charter school failure in North Carolina. *Educational Administration Quarterly*, *50*, 500–536.
Palmer, T. B., & Short, J. C. (2008). Mission statements in U.S. colleges of business: An empirical examination of their content with linkages to configurations and performance. *Academy of Management Learning & Education*, *7*, 454–470.
Parvis, E. A. (2015). When choice is the only option: The New Orleans all-charter school system and the inequality it breeds. *Columbia Human Rights Law Review*, *47*, 280–311.
Patrick, C. (2015). *Willing to pay: Charter schools' impact on Georgia property values*. Atlanta, GA: Fiscal Research Center, Georgia State University.
Pattillo-McCoy, M. (1999). Black picket fences: Privilege and peril among the Black middle class. Chicago, IL: University of Chicago Press.
Pearce, J. A., II, & David, F. R. (1987). Corporate mission statements: The bottom line. *The Academy of Management Executive*, *1*(2), 109–115.
Penchansky, R., & Thomas, J. W. (1981). The concept of access: Definition and relationship to consumer satisfaction. *Medical Care*, *19*, 127–140.
Pendall, R. (2012, January 30). Housing markets in six metropolitan areas and their main central cities. *LISC Institute for Comprehensive Community Development*. Retrieved from http://www.instituteccd.org/uploads/iccd/documents/pendall_housing_markets_paper.pdf
Perez, J., Jr, & Richards, J. S. (2015, October 5). Chicago schools with enrollment declines face major budget cuts. *Chicago Tribune*.
Peshkin, A. (1982). The imperfect union: School consolidation & community conflict. Chicago, IL: The University of Chicago Press.
Phillippo, K. L., & Griffin, B. (2016). The social geography of choice: Neighborhoods' role in students' navigation of school choice policy in Chicago. *Urban Review*, *48,* 668-695.
Phillips, K. J. R., Hausman, C. S., & Larsen, E. S. (2012). Students who choose & the schools they leave: Examining participation in intra-district transfers. *The Sociological Quarterly*, *53*, 264–294.
Pinch, S. (1987). The changing geography of preschool services in England between 1977 and 1983. *Environment and Planning C: Government and Policy*, *5*, 469–480.
Podmolik, M. E. (1998, May 10). Downtown spreading out as residents pour in. *Chicago Sun-Times*, p. A20.
Pont, Du, P. S., Goodman, J. C., & Steiger, F. S. (2001). An education agenda. Dallas, TX: National Center for Policy Analysis.
Posey-Maddox, L. (2016). Beyond the consumer: Parents, privatization, and fundraising in US urban public schooling. *Journal of Education Policy*, *31*, 178–197.
Posey-Maddox, L., Kimelberg, S. M., & Cucchiara, M. (2014). Middle-class parents and urban public schools: Current research and future directions. *Sociology Compass*, *8*, 446–456.

Post, D., & Stambach, A. (1999). District consolidation and rural school closure: E pluribus unum? *Journal of Research in Rural Education*, *15*, 106–117.
Powell, M., & Boyne, G. A. (2001). The spatial strategy of equality and the spatial division of welfare. *Social Policy & Administration*, *35*, 181–194.
Putnam, R. D. (2000). Bowling alone: The collapse and revival of American community. New York, NY: Simon & Schuster.
Quinn, R., Tompkins-Stange, M., & Meyerson, D. (2014). Beyond grantmaking: Philanthropic foundations as agents of change and institutional entrepreneurs. *Nonprofit and Voluntary Sector Quarterly*, *43*, 950–968.
Radke, J., & Mu, L. (2000). Spatial decompositions, modeling and mapping service regions to predict access to social programs. *Geographic Information Sciences*, *6*, 105–112.
Rapp, K. E., & Eckes, S. E. (2007). Dispelling the myth of "white flight": An examination of minority enrollment in charter schools. *Educational Policy*, *21*, 615–661.
Reardon, S. F., & Bischoff, K. (2011). Income inequality and income segregation. *American Journal of Sociology*, *116*, 1092–1153.
Reardon, S. F., & Yun, J. T. (2001). Suburban racial change and suburban school segregation, 1987-95. *Sociology of Education*, *74*, 79–101.
Reardon, S. F., Fox, L., & Townsend, J. (2015). Neighborhood income composition by household race and income, 1990-2009. *The Annals of the American Academy of Political and Social Science*, *660*, 78–97.
Reardon, S. F., Yun, J. T., & Eitle, T. M. (2000). The changing structure of school segregation: Measurement and evidence of multiracial metropolitan-area school segregation, 1989–1995. *Demography*, *37*, 351–364.
Reay, D., & Lucey, H. (2003). The limits of "choice": Children and inner city schooling. *Sociology*, *37*, 121–142.
Renzulli, L. A., & Evans, L. (2005). School choice, charter schools, and white flight. *Social Problems*, *52*, 398–418.
Renzulli, L. A., Barr, A. B., & Paino, M. (2015). Innovative education? A test of specialist mimicry or generalist assimilation in trends in charter school specialization over time. *Sociology of Education*, *88*, 83–102.
Rhodes, A., & DeLuca, S. (2014). Residential mobility and school choice among poor families. In A. Lareau & K. A. Goyette (Eds.), *Choosing homes, choosing schools* (pp. 137–166). New York, NY: Russell Sage Foundation.
Richards, M. P. (2014). The gerrymandering of school attendance zones and the segregation of public schools: A geospatial analysis. *American Educational Research Journal*, *51*, 1119–1157.
Richards, M. P., & Stroub, K. J. (2014). The fragmentation of metropolitan public school districts and the segregation of American schools. *Teachers College Record*, *116*(12). Retrieved from http://www.tcrecord.org/library/content.asp?contentid=17693
Rietveld, P., & Bruinsma, F. (1998). Is transport infrastructure effective?: Transport infrastructure and accessibility: Impacts on the space economy. Berlin, Germany: Springer.
Ritter, G. W., Jensen, N. C., Kisida, B., & Bowen, D. H. (2016). Urban school choice and integration: The effect of charter schools in Little Rock. *Education and Urban Society*, *48*, 535–555.

Rivkin, S. G., & Welch, F. (2006). Has school desegregation improved academic and economic outcomes for Blacks. In E. A. Hanushek & F. Welch (Eds.), *Handbook of the Economics of Education, Volume 2* (pp. 1019–1049). Amsterdam, Netherlands: Elsevier.

Robers, S., Zhang, A., Morgan, R. E., & Musu-Gillette, L. (2015). *Indicators of school crime and safety: 2014*. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Robertson, S. L., & Dale, R. (2013). The social justice implications of privatisation in education governance frameworks: A relational account. *Oxford Review of Education*, *39*, 426–445.

Robinson, K. J. (2007). The case for a collaborative enforcement model for a federal right to education. *University of California Davis Law Review*, *40*, 1653–1748.

Roch, C. H., & Sai, N. (2015). Nonprofit, for-profit, or stand-alone? How management organizations influence the working conditions in charter schools. *Social Science Quarterly*, *96*, 1380–1395.

Rodríguez, C., Amador, A., & Tarango, B. A. (2016). Mapping educational equity and reform policy in the borderlands: LatCrit spatial analysis of grade retention. *Equity & Excellence in Education*, *49*, 228–240.

Rosenbaum, J. E. (1995). Changing the geography of opportunity by expanding residential choice: Lessons from the Gautreaux program. *Housing Policy Debate*, *6*, 231–269.

Rosenbaum, J. E., DeLuca, S., & Tuck, T. (2005). New capabilities in new places: Low-income Black families in suburbia. In X. de S. Briggs (Ed.), *The geography of opportunity: Race and housing choice in metropolitan America* (pp. 150–175). Washington, DC: Brookings Institution Press.

Rotberg, I. C. (2014). Charter schools and the risk of increased segregation. *The Phi Delta Kappan*, *95*(February), 26–30.

Rothwell, J. T., & Massey, D. S. (2010). Density zoning and class segregation in U.S. metropolitan areas. *Social Science Quarterly*, *91*, 1123–1143.

RPP International. (2000). *The state of charter schools, 2000*. Washington, DC: Government Printing Office.

Ryan, J. E. (2010). Five miles away, a world apart: One city, two schools, and the story of educational opportunity in modern America. New York, NY: Oxford University Press.

Ryan, J. E., & Heise, M. (2002). The political economy of school choice. *The Yale Law Journal*, *111*, 2043–2136.

Saltman, K. J. (2011). From Carnegie to Gates: The Bill and Melinda Gates Foundation and the venture philanthropy agenda for public education. In P. E. Kovacs (Ed.), *The Gates Foundation and the future of U.S. "public" schools* (pp. 1–20). New York, NY: Routledge.

Salze, P., Banos, A., Oppert, J.-M., Charreire, H., Casey, R., Simon, C., et al. (2011). Estimating spatial accessibility to facilities on the regional scale: An extended commuting-based interaction potential model. *International Journal of Health Geographics*, *10*(2).

Sampson, E. E. (1975). On justice as equality. *Journal of Social Issues*, *31*(3), 45–64.

Sandoval, J. S. O. (2011). Neighborhood diversity and segregation in the Chicago metropolitan region, 1980-2000. *Urban Geography*, *32*, 609–640.

Saporito, S., & Sohoni, D. (2006). Coloring outside the lines: Racial segregation in public schools and their attendance boundaries. *Sociology of Education*, *79*, 81–105.

Saporito, S., & Sohoni, D. (2007). Mapping educational inequality: Concentrations of poverty among poor and minority students in public schools. *Social Forces*, *85*, 1227–1253.

Saultz, A., Fitzpatrick, D., & Jacobsen, R. (2015). Exploring the supply side: Factors related to charter school openings in NYC. *Journal of School Choice*, *9*, 446–466.
Savas, E. S. (2005). Privatization in the city: Successes, failures, lessons. Washington, DC: CQ Press.
Sá, C., Florax, R. J. G. M., & Rietveld, P. (2006). Does accessibility to higher education matter? Choice behaviour of high school graduates in the Netherlands. *Spatial Economic Analysis*, *1*, 155–174.
Schafft, K. A., & Biddle, C. (2013). Place and purpose in public education: School district mission statements and educational (dis)embeddedness. *American Journal of Education*, *120*, 55–76.
Schlossberg, M., Greene, J., Phillips, P. P., Johnson, B., & Parker, B. (2006). School trips: Effects of urban form and distance on travel mode. *Journal of the American Planning Association*, *72*, 337–346.
Schneider, M., Teske, P., & Marshall, M. (2000). *Choosing schools: Consumer choice and the quality of American schools*. Princeton, NJ: Princeton University Press.
Schneider, M., Teske, P., Roch, C. H., & Marschall, M. (1997). Networks to nowhere: Segregation and stratification in networks of information about schools. *American Journal of Political Science*, *41*, 1201–1223.
Schuurman, N., Bérubé, M., & Crooks, V. A. (2010). Measuring potential spatial access to primary health care physicians using a modified gravity model. *The Canadian Geographer/Le Geographe Canadien*, *54*, 29–45.
Schwartz, A. E., & Stiefel, L. (2014). Linking housing policy and school reform. In A. Lareau & K. A. Goyette (Eds.), *Choosing homes, choosing schools* (pp. 295–314). New York, NY: Russell Sage Foundation.
Scott, H. J. (1983). Desegregation in Nashville: Conflicts and contradictions in preserving schools in Black communities. *Education and Urban Society*, *15*, 235–244.
Scott, J. T. (2011). School choice as a civil right: The political construction of a claim and its implications for school desegregation. In E. Frankenberg & E. DeBray (Eds.), *Integrating schools in a changing society New policies and legal options for a multiracial generation* (pp. 32–52). Chapel Hill, NC: University of North Carolina Press.
Scott, J. T., & Holme, J. J. (2016). The political economy of market-based educational policies: Race and reform in urban school districts, 1915 to 2016. *Review of Research in Education*, *40*, 250–297.
Scott, J. T., & Wells, A. S. (2013). A more perfect union: Reconciling school choice policy with equality of opportunity goals. In P. L. Carter & K. G. Welner (Eds.), *Closing the opportunity gap: What America must do to give every child an even chance* (pp. 123–140). New York, NY: Oxford University Press.
Scott, J. T., Lubienski, C. A., & DeBray, E. (2009). The politics of advocacy in education. *Educational Policy*, *23*, 3–14.
Scott, R., & Saucedo, M. (2013). Mass incarceration, the school-to-prison pipeline, and the struggle over "secure communities" in Illinois. *Journal of Educational Controversy*, *7*(1).
Sell, R. S., & Leistritz, F. L. (1997). Socioeconomic impacts of school consolidation on host and vacated communities. *Journal of the Community Development Society*, *28*, 186–205.
Shapiro, T. M. (2004). The hidden cost of being African American: How wealth perpetuates inequality. New York, NY: Oxford University Press.

Sharkey, P. (2010). The acute effect of local homicides on children's cognitive performance. *Proceedings of the National Academy of Sciences of the United States of America*, *107*, 11733–11738.

Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *American Journal of Sociology*, *116*, 1934–1981.

Shavers, A. W. (2005). Closing the school doors in the pursuit of equal education opportunity: A comment on Montoy v. State, 2003 WL 22902963 (Kan. Dist. Ct. 2003). *Nebraska Law Review*, *83*, 901–914.

Sheehan, R. M. (1996). Mission accomplishment as philanthropic organization effectiveness: Key findings from the excellence in philanthropy project. *Nonprofit and Voluntary Sector Quarterly*, *25*, 110–123.

Shen, Q. (1998). Location characteristics of inner-city neighborhoods and employment accessibility of low-wage workers. *Environment and Planning B: Planning and Design*, *25*, 345–365.

Siegel-Hawley, G. (2013). City lines, county lines, color lines: The relationship between school and housing segregation in four Southern metro areas. *Teachers College Record*, *115*(6). Retrieved from http://www.tcrecord.org/library/content.asp?contentid=16988

Siegel-Hawley, G. (2014). Mitigating Milliken? School district boundary lines and desegregation policy in four southern metropolitan areas, 1990–2010. *American Journal of Education*, *120*, 391–433.

Siegel-Hawley, G., Bridges, K., & Shields, T. J. (2017). Solidifying segregation or promoting diversity? School closure and rezoning in an urban district. *Educational Administration Quarterly*, *53,* 107-141.

Sirard, J. R., & Slater, M. E. (2008). Walking and bicycling to school: A review. *American Journal of Lifestyle Medicine*, *2*, 372–396.

Smith, D. M., Cummins, S., Taylor, M., Dawson, J., Marshall, D., Sparks, L., & Anderson, A. S. (2010). Neighbourhood food environment and area deprivation: Spatial accessibility to grocery stores selling fresh fruit and vegetables in urban and rural settings. *International Journal of Epidemiology*, *39*, 277–284.

Smith, J., Wohlstetter, P., Kuzin, C. A., & De Pedro, K. (2011). Parent involvement in urban charter schools: New strategies for increasing participation. *School Community Journal*, *21*(1), 71–94.

Smrekar, C., & Goldring, E. B. (1999). School choice in urban America: Magnet schools and the pursuit of equity. New York, NY: Teachers College Press.

Sohoni, D., & Saporito, S. (2009). Mapping school segregation: Using GIS to explore racial segregation between schools and their corresponding attendance areas. *American Journal of Education*, *115*, 569–600.

Soja, E. W. (2011). Beyond postmetropolis. *Urban Geography*, *32*, 451–469.

South, S. J., & Crowder, K. D. (1997). Residential mobility between cities and suburbs: Race, suburbanization, and back-to-the-city moves. *Demography*, *34*, 525–538.

South, S. J., Crowder, K. D., & Pais, J. (2011). Metropolitan structure and neighborhood attainment: Exploring intermetropolitan variation in racial residential segregation. *Demography*, *48*, 1263–1292.

Starr, P. (2014). The meaning of privatization. In S. B. Kamerman & A. J. Khan (Eds.), *Privatization and the welfare state* (pp. 15–48). Princeton, NJ: Princeton University Press.

Stein, M. L. (2015). Public school choice and racial sorting: An examination of charter schools in Indianapolis. *American Journal of Education*, *121*, 597–627.

Stein, M. L., Goldring, E. B., & Cravens, X. (2010). Do parents do as they say? Choosing Indianapolis charter schools. In M. Berends, M. Cannata, & E. B. Goldring (Eds.), *School choice and school improvement* (pp. 105–123). Cambridge, MA: Harvard Education Press.

Steiner, R. L., Crider, L. B., Betancourt, M., & Hall, A. K. (2006). *Safe ways to school: The role in multimodal planning*. Gainesville, FL: Florida Department of Transportation Systems Planning Office.

Stemler, S. E. (2001). An overview of content analysis. *Practical Assessment, Research & Evaluation*, *7*(17). Retrieved from http://pareonline.net/getvn.asp?v=7&n=17

Stemler, S. E., & Bebell, D. (1999). An empirical approach to understanding and analyzing the mission statements of selected educational institutions. Presented at the annual meeting of the New England Educational Research Organization, Portsmouth, NH: ERIC.

Stemler, S. E., Bebell, D., & Sonnabend, L. A. (2011). Using school mission statements for reflection and research. *Educational Administration Quarterly*, *47*, 383–420.

Stich, A. E., & Reeves, T. D. (2016). Class, capital, and competing academic discourse: A critical analysis of the mission/s of American higher education. *Discourse: Studies in the Cultural Politics of Education*, *37*(1), 116–132.

Stoddard, C., & Corcoran, S. P. (2007). The political economy of school choice: Support for charter schools across states and school districts. *Journal of Urban Economics*, *62*(1), 27–54.

Streifel, J. S., Foldesy, G., & Holman, D. M. (1991). The financial effects of consolidation. *Journal of Research in Rural Education*, *7*(2), 13–20.

Stuit, D. (2012). Turnaround and closure rates in the charter and district sectors. *Journal of Education for Students Placed at Risk*, *17*, 40–54.

Swales, J. M., & Rogers, P. S. (1995). Discourse and the projection of corporate culture: The mission statement. *Discourse & Society*, *6*, 223–242.

Taeuber, K. E., & Taeuber, A. F. (1965). Negroes in cities: Residential segregation and neighborhood change. Chicago, IL: Chicago Aldine Publishing Company.

Talen, E. (1997). The social equity of urban service distribution: An exploration of park access in Pueblo, Colorado, and Macon, Georgia. *Urban Geography*, *18*, 521–541.

Talen, E. (2001). School, community, and spatial equity: An empirical investigation of access to elementary schools in West Virginia. *Annals of the Association of American Geographers*, *91*, 465–486.

Talen, E., & Anselin, L. (1998). Assessing spatial equity: An evaluation of measures of accessibility to public playgrounds. *Environment and Planning A*, *30*, 595–613.

Tanner, K. (2015, May 16). How far do kids travel to Detroit schools? *Detroit Free Press*. Retrieved from http://www.freep.com/story/opinion/contributors/raw-data/2015/05/16/student-commutes-detroit/27390145/

Tate, W. F., IV. (2008). "Geography of opportunity": Poverty, place, and educational outcomes. *Educational Researcher*, *37*, 397–411.

Taylor, B. J., & Morphew, C. C. (2010). An analysis of baccalaureate college mission statements. *Research in Higher Education*, *51*, 483–503.

Taylor, C. (2001). Hierarchies and 'local' markets: The geography of the "lived" market place in secondary education provision. *Journal of Education Policy*, *16*, 197–214.

Tegeler, P. D. (2005). The persistence of segregation in government housing programs. In X. de S. Briggs (Ed.), *The geography of opportunity: Race and housing choice in metropolitan America* (pp. 197–216). Washington, DC: Brookings Institution Press.

Teske, P., Schneider, M., & Cassese, E. (2005). Local school boards as authorizers of charter schools. In W. G. Howell (Ed.), *Besieged: School boards and the future of education politics* (pp. 129–149). Washington, DC: Brookings Institution Press.

The Equity and Excellence Commission. (2013). *For each and every child: A strategy for education equity and excellence*. Washington, DC: The Equity and Excellence Commission.

The Schott Foundation for Public Education. (2013, April 23). The color of school closures. Retrieved October 13, 2016, from http://schottfoundation.org/blog/2013/04/05/color-school-closures

Thompson, J. P. (2017). Place matters, and so does race. *Urban Affairs Review, 53*, 210-218.

Tiebout, C. M. (1956). A pure theory of local expenditures. *The Journal of Political Economy*, *64*, 416–424.

Timberlake, J. M., & Johns-Wolfe, E. (2017). Neighborhood ethnoracial composition and gentrification in Chicago and New York, 1980 to 2010. *Urban Affairs Review, 53,* 236-272.

Tobler, W. (2004). Thirty five years of computer cartograms. *Annals of the Association of American Geographers*, *94*, 58–73.

Truelove, M. (1993). Measurement of spatial equity. *Environment and Planning C: Government and Policy*, *11*, 19–34.

Trujillo, T. (2016). Restoring the federal commitment to equal educational opportunity: New directions for ESSA's school improvement initiatives. *Education Law & Policy Review*, *3*, 141–165.

Turley, R. N. L. (2009). College proximity: Mapping access to opportunity. *Sociology of Education*, *82*, 126–146.

U.S. Government Accountability Office. (2012). *Charter schools: Additional federal attention needed to help protect access for student with disabilities* (No. GAO-12-543). Washington, DC: U.S. Government Accountability Office.

U.S. Government Accountability Office. (2016). *Better use of information could help agencies identify disparities and address racial discrimination* (No. GAO-16-345). Washington, DC: U.S. Government Accountability Office.

Ulfarsson, G. F., & Shankar, V. N. (2008). Children's travel to school: Discrete choice modeling of correlated motorized and nonmotorized transportation modes using covariance heterogeneity. *Environment and Planning B: Planning and Design*, *35*, 195–206.

Urban Institute. (2017). *Student transportation and educational access: How students get to school in Denver, Detroit, New Orleans, New York City, and Washington, DC*. Washington, DC: Urban Institute. Retrieved from http://www.urban.org/research/publication/student-transportation-and-educational-access

Urist, J. (2015, December 2). Reimagining abandoned schools. *The Atlantic*. Retrieved from http://www.theatlantic.com/education/archive/2015/12/reimagining-abandoned-schools/418311/

Urquiola, M. (2005). Does school choice lead to sorting? Evidence from Tiebout variation. *The American Economic Review*, *95*, 1310–1326.

Valencia, R. R. (2013). The school closure issue and the Chicano community: A follow-up study of the Angeles case. *Urban Review*, *16*, 145–163.
Van Slyke, D. M. (2003). The mythology of privatization in contracting for social services. *Public Administration Review*, *63*, 296–315.
Vergari, S. (2001). Charter school authorizers: Public agents for holding charter schools accountable. *Education and Urban Society*, *33*, 129–140.
Vergari, S. (2002). The charter school landscape. Pittsburgh, PA: University of Pittsburgh Press.
Villanueva v. Carere, 85 F.3d 481 (1994).
Viteritti, J. P. (1999). Choosing equality: School choice, the constitution, and civil society. Washington, DC: Brookings Institution Press.
Walberg, H. J., & Bast, J. L. (2003). Education and capitalism. Stanford, CA: Hoover Institution Press.
Wall, J. T. (1998). The establishment of charter schools: A guide to legal issues for legislatures. *Brigham Young University Education and Law Journal*, *1998*, 69–102.
Walster, E., & Walster, G. W. (1975). Equity and social justice. *Journal of Social Issues*, *31*(3), 21–43.
Wamba, N., & Ascher, C. (2003). An examination of charter school equity. *American Behavioral Scientist*, *35*, 462–476.
Wan, N., Zhan, F. B., Zou, B., & Chow, E. (2012). A relative spatial access assessment approach for analyzing potential spatial access to colorectal cancer services in Texas. *Applied Geography*, *32*, 291–299.
Wan, N., Zhan, F. B., Zou, B., & Wilson, J. G. (2013). Spatial access to health care services and disparities in colorectal cancer stage at diagnosis in Texas. *The Professional Geographer*, *65*, 527–541.
Wang, F. (2001). Explaining intraurban variations of commuting by job proximity and workers' characteristics. *Environment and Planning B: Planning and Design*, *28*, 169–182.
Wang, F., & Luo, W. (2005). Assessing spatial and nonspatial factors for healthcare access: Towards an integrated approach to defining health professional shortage areas. *Health & Place*, *11*, 131–146.
Wang, F., & Minor, W. W. (2002). Where the jobs are: Employment access and crime patterns in Cleveland. *Annals of the Association of American Geographers*, *92*, 435–450.
Wang, L. (2007). Immigration, ethnicity, and accessibility to culturally diverse family physicians. *Health & Place*, *13*, 656–671.
Weber, R. P. (1990). Basic content analysis. Newbury Park, CA: SAGE Publications.
Weiler, S. C., & Vogel, L. R. (2015). Charter school barriers: Do enrollment requirements limit student access to charter schools? *Equity & Excellence in Education*, *48*, 36–48.
Weinstein, M. G., Jacobowitz, R., Maguire, C., Saunders, T., & Fruchter, N. (2007). *Stability in student and teacher characteristics in the first ten years: A study of small high schools in New York City*. New York, NY: Institute for Education and Social Policy.
Weisbrod, B. A. (1998). Institutional form and organizational behavior. In W. W. Powell & E. S. Clemens (Eds.), *Private action and the public good* (pp. 69–84). New Haven, CT: Yale University Press.
Weiss, J. A., & Piderit, S. K. (1999). The value of mission statements in public agencies. *Journal of Public Administration Research and Theory*, *9*(2), 193–224.

Wells, A. S., Grutzik, C., Carnochan, S., Slayton, J., & Vasudeva, A. (1999). Underlying policy assumptions of charter school reform: The multiple meanings of a movement. *Teachers College Record*, *100*, 513–535.
Williams, L. S. (2008). The mission statement: A corporate reporting tool with a past, present, and future. *Journal of Business Communication*, *45*(2), 94–119.
Williams, S., & Wang, F. (2014). Disparities in accessibility of public high schools, in metropolitan Baton Rouge, Louisiana 1990–2010. *Urban Geography*, *35*, 1066–1083.
Wilson, D., & Sternberg, C. (2012). Changing realities: The new racialized redevelopment rhetoric in Chicago. *Urban Geography*, *33*, 979–999.
Wilson, E. J., Marshall, J. D., Wilson, R. D., & Krizek, K. J. (2010). By foot, bus or car: Children's school travel and school choice policy. *Environment and Planning A*, *42*, 2168–2185.
Wilson, E. J., Wilson, R. D., & Krizek, K. J. (2007). The implications of school choice on travel behavior and environmental emissions. *Transportation Research Part D: Transport and Environment*, *12*, 506–518.
Wilson, E. K. (2011). Leveling localism and racial inequality in education through the No Child Left Behind Act public choice provision. *Journal of Law Reform*, *44*, 625–665.
Wilson, E. K. (2014). Toward a theory of equitable federated regionalism in public education. *UCLA Law Review*, *61*, 1416–1479.
Wilson, W. J. (1987). The truly disadvantaged: The inner city, the underclass, and public policy. Chicago, IL: University of Chicago Press.
Wilson, W. J. (2012). The truly disadvantaged: The inner city, the underclass, and the public policy. Chicago, IL: University of Chicago Press.
Winters, M. A. (2012). Measuring the effect of charter schools on public school student achievement in an urban environment: Evidence from New York City. *Economics of Education Review*, *31*, 293–301.
Witte, J. F., Schlomer, P. A., & Shober, A. F. (2007). Going charter? A study of school district competition in Wisconsin. *Peabody Journal of Education*, *82*, 410–439.
Witte, J. F., Shober, A. F., & Manna, P. F. (2003). Analyzing state charter school laws and their influence on the formation of charter schools in the United States. Presented at the annual meeting of the American Political Science Association, Philadelphia, PA.
Witten, K., Exeter, D., & Field, A. (2003). The quality of urban environments: Mapping variation in access to community resources. *Urban Studies*, *40*, 161–177.
Witten, K., McCreanor, T., Kearns, R. A., & Ramasubramanian, L. (2001). The impacts of a school closure on neighbourhood social cohesion: Narratives from Invercargill, New Zealand. *Health & Place*, *7*, 307–317.
Wohlstetter, P., Smith, J., & Farrell, C. (2013). Choices and challenges: Charter school performance in perspective. Cambridge, MA: Harvard Education Press.
Wohlstetter, P., Wenning, R., & Briggs, K. L. (1995). Charter schools in the United States: The question of autonomy. *Educational Policy*, *9*, 331–358.
Yang, Y., Abbott, S., & Schlossberg, M. (2012). The influence of school choice policy on active school commuting: A case study of a middle-sized school district in Oregon. *Environment and Planning A*, *44*, 1856–1874.
Yinger, J. (1997). Closed doors, opportunities lost: The continuing costs of housing discrimination. New York, NY: Russell Sage Foundation Publications.

Yoon, H., & Srinivasan, S. (2015). Are they well situated? Spatial analysis of privately owned public space, Manhattan, New York City. *Urban Affairs Review*, *51*, 358–380.
Zenk, S. N., Schulz, A. J., Israel, B. A., James, S. A., Bao, S., & Wilson, M. L. (2005). Neighborhood racial composition, neighborhood poverty, and the spatial accessibility of supermarkets in metropolitan Detroit. *American Journal of Public Health*, *95*, 660–667.
Zimmer, R. W., Buddin, R. J., Chau, D., Daley, G., Guarino, C. M., Hamilton, L., et al. (2003). *Charter school operations and performance: Evidence from California*. Santa Monica, CA: RAND Corporation.
Zimmer, R. W., Gill, B., Booker, K., Lavertu, S., Sass, T. R., & Witte, J. F. (2009). *Charter schools in eight states: Effects on achievement, attainment, integration, and competition*. Santa Monica, CA: RAND Corporation.
Zollers, N. J., & Ramanathan, A. K. (1998). For-profit charter schools and students with disabilities: The sordid side of the business of schooling. *The Phi Delta Kappan*, *80*, 297–304.

APPENDIX A: SPATIAL ACCESSIBILITY MEASURE

Measuring spatial accessibility has largely depended on gravity-based models, also known as a spatial interaction model (Guagliardo, 2004; Hu, 2014; Luo & Wang, 2003; Pacione, 1989; Schuurman, Bérubé, & Crooks, 2010; Shen, 1998; F. Wang, 2001; F. Wang & Minor, 2002). Gravity models estimate the value of the potential interaction between population points and service points within a given distance, often equivalent to the distance decay (Guagliardo, 2004). In developing a measure of accessibility using gravity models, the key component is to decompose the attraction factors affecting the spatial separation between students and schools (Huff & Jenks, 1968). The gravity-based accessibility model is presented as follows (Hansen, 1959):

$$A_i^v = \sum_j \frac{S_j (t_{ij}^v)^{-\beta}}{\sum_m P_j^m}$$

where A_i^v is the accessibility in location i by transportation mode v, S_j is the number of school enrollments at location j, P_j^m is the prospective demand in location j utilizing transportation mode m, t_{ij}^v is the time between location i and location j by mode, and β is the exponent describing the spatial separation (Shen, 1998; F. Wang & Minor, 2002). Despite the complete concept of gravity models for measuring accessibility, it is not easy to interpret and needs various data sources to calculate (Luo & Qi, 2009). Specifically, β as a negative exponential distance friction is derived from actual distances and times between choosers and charter schools through empirical research, but this data is generally not available (Wan et al., 2012). For this reason, many researchers use arbitrarily determined coefficients.

In this sense, the enhanced two-step floating catchment area method is developed to minimize uncertainties of gravity models (Luo & Qi, 2009; Radke & Mu, 2000). At the first step of the method, each school has the school enrollment-to-student number ratio within a threshold travel time from the school. In the below left figure, one school has the ratio of school capacity to the number of children in 5 census tracts. At the second step, accessibility at an individual census tract is estimated as the sum of the ratios within threshold travel time or distance. Because the accessible area of one census tract includes two schools in the below right figure, its accessibility is the sums of ratios of two schools, as calculated at the first step.

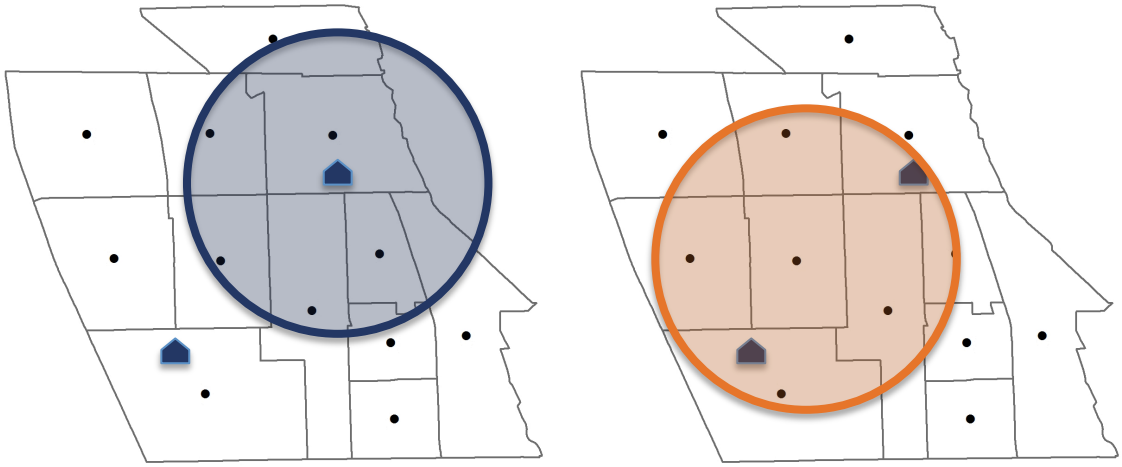

Figure A-1. The sample accessible areas for the enhanced two-step floating catchment area method

Though a value of accessibility at each census tract is estimated by setting a threshold time or distance, there exist differences of travel impedance even within catchment areas. As well as a dichotomous measure of either inside or outside of catchment areas, accessibility within one catchment can be differently measured by the time (or distance) weight from the centroids of

individual census tracts. Prior research has introduced diverse methods for the estimation of the weight, including the inverse power and negative exponential (Dai, 2010; 2011; Guagliardo, 2004; Kwan, 1998; Luo & Qi, 2009; Luo & Whippo, 2012; L. Wang, 2007). Those methods following 'clear-cut neighborhood boundaries' commonly divide one catchment area into several sub-zones, and then employ discrete zonal weighted methods as shown in the below left figure. Yet, geographies in metropolitan regions with highly developed transportation systems are continuously spread rather than sharply separated as presented in the below right figure (Dai, 2010; 2011; Langford et al., 2012; Salze et al., 2011). Therefore, this study incorporates a Gaussian function accounting for the continuous and incremental decay.

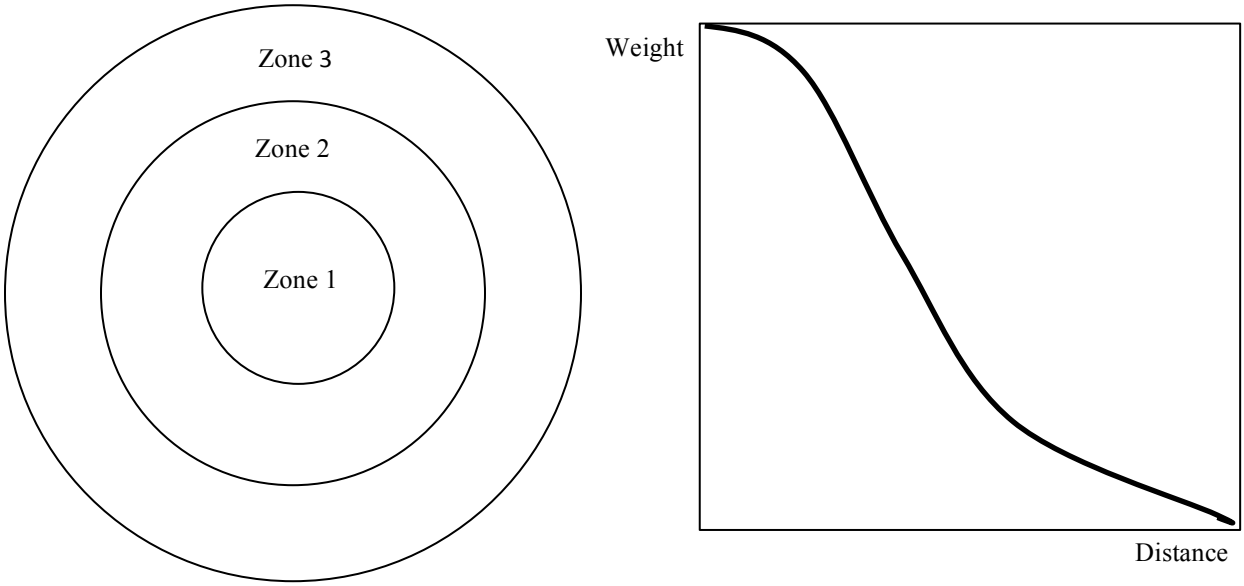

Figure A-2. The comparison of travel impedance methods